THE ADVANTAGES OF ORACLE OPTIMIZED SOLUTIONS

VS. HP’S BLADE SERVER APPROACH: CUSTOMER PERSPECTIVE

April, 2012
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Executive Summary

Blade servers are an effective infrastructure strategy for enabling growth and scale in today’s data centers in the face of mounting space and power constraints. Companies are deploying blade servers as one strategy to maximize space, reduce cost, lower risk, improve agility and reduce management overhead. Fueled increasingly by private and public cloud deployments, they now represent a significant and growing proportion of the x86 server market.

With blade servers emerging as a key part of the server portfolio, a broader trend afoot has companies shifting attention to a “whole solution” perspective, given that blades deployments require specialized elements that must be installed together. As a result, there is less emphasis on building up IT infrastructure from piecemeal hardware elements, and more on a top down understanding that components and benefits are linked. However, today this link extends to the application workloads and services being delivered and not just hardware components as are typically combined in a blade deployment. In short, software is increasingly driving hardware but this is not necessarily integrated into all or most blade systems.

Primary research into companies experienced with many vendors’ blade offerings shows that there is a significant advantage in having converged hardware; even better is to have an optimized software and hardware solution for cloud and other highly virtualized deployments.

Interviewees cited Oracle as the only vendor that offers a complete and truly optimized solution of native software and hardware combined from a single vendor with a single point of support. All solution components are integrated, pre-configured and tested to save time, lower cost and reduce risk and fully realize the benefits that blade servers promise. Hewlett Packard’s blade servers were acknowledged as a good product with some distinct advantages regarding maximum compute density potential and solid performance within the hardware chassis, but interviewees cited issues with having to build their own customized solution using numerous vendor products when it came to applying software to their blade solution. It also required customers to “self-optimize” their own systems which led to time, cost and risk implications. As a
result, ORC International’s research with a panel of blade system experts and implementers found:

- Oracle on Oracle deployments are a range of 30% to 50% less costly than HP blade server-based deployments
- Faster time to value for Oracle’s Optimized Solution approach that yields deployment times measured in “days versus weeks to months with HP Blades”
- A single, “no finger pointing” support model from Oracle that accelerates resolution
- Less complexity and lower risk based on using Oracle blade servers vs. HP’s

**ORC International Research Methodology**

ORC International conducted extensive primary and secondary research to better understand the key trends in the market with respect to optimized solutions, drawing from a panel of ten blade server-based solution experts experienced with purchasing, implementing and managing deployments of both Oracle and HP. The panel included a balanced mix of large enterprise companies, cloud service providers and blade server resellers. Each panelist completed an in-depth questionnaire and participated in a structured interview process detailing the quantitative and qualitative considerations of blade server deployments and experiences with both HP and Oracle blade servers. Primary research panelist roles and companies represented are listed in Table 1.

<table>
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<th>Role</th>
<th>Company</th>
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<td>Senior Systems Architect</td>
<td>Fortune 50 Telecommunications/Cloud Services Provider</td>
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<tr>
<td>Senior Systems Administrator</td>
<td>Fortune 50 Healthcare Products &amp; Pharmaceuticals Company</td>
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<tr>
<td>Enterprise Architect</td>
<td>Fortune 50 Pharmaceutical Company</td>
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<tr>
<td>IT Deployment Engineer</td>
<td>UK Healthcare Company</td>
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<tr>
<td>Virtualization/Solutions Architect</td>
<td>Fortune 500 Technology Solutions Provider</td>
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<td>Senior Solutions Architect</td>
<td>IT Solutions Provider</td>
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<td>Systems Administrator</td>
<td>IT Services Provider to Government</td>
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<tr>
<td>Solution Architect</td>
<td>IT Integrator/Solutions Provider</td>
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<td>Solution Specialist</td>
<td>VAR of HP/Oracle</td>
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<tr>
<td>Solution Engineer</td>
<td>HP/Oracle Reseller</td>
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Beyond Converged Infrastructure: Optimized Solutions

With the entry of server virtualization in the early 2000s, the IT landscape evolved with companies vertically scaling by purchasing massive servers and creating virtualized instances of servers running on these larger boxes. This promised to consolidate environments, lower hardware costs and provide the ability to more rapidly scale up services through software virtual machines. More recently, with the ubiquity and commoditization of powerful x86-based servers, a parallel trend of horizontal scaling via a “rack and stack” model has led to sprawling deployments of hard node servers. With these deployment models, it still left a considerable operational burden on the IT functions of both enterprises and service providers.

With ever smaller form factor servers with faster processors and expansive memory, the market is now witnessing a hybrid model of horizontal scaling via blade servers while simultaneously taking advantage of virtualization, pooling and sharing of services at the server, network, storage and management levels. This is particularly important for private and public clouds, which is gaining momentum in both the SMB and enterprise customer segments. In fact, Morgan Stanley Research suggests that workloads running in public cloud environments will grow at 50% CAGR over the next three years.

The business benefits for the blade server approach are many, including:

- Improved computing density along with integrated virtualization, storage, and networking
- Increased agility to enable new services quickly
- Lowered costs and ability to better manage cost over time
- Reduced risk in terms of system complexity and ability to solve problems quickly

This helps explain why blade servers now represent over 20% of all x86 server revenues and are an important decision point in the context of the overall IT portfolio. ORC International’s research finds the decision to adopt blade servers is often just one part of a larger software and service delivery strategy. It goes well beyond the compute, network and storage resources and up to the applications being delivered in the enterprise or via private or public clouds. That is where converged infrastructure or more specifically, optimized solutions, is recognized by experts as an important trend in the blade server market.

A leading IT analyst firm validates these findings in recent report finding, “a strategic fit between server platforms and the workloads that run on them. The workload represents a critical consideration in the design of converged infrastructure, including workload-optimized systems…with engineered systems around business outcomes, rather than focusing on the technology innovation alone.”
Along these lines, hardware companies such as HP do offer converged infrastructure solutions involving best practices for multiple vendor elements tested together for a few specific configurations. While helpful in narrow situations, there is potentially much more to be gained if optimized solutions encompassing a variety of configurations were available from a single vendor who made substantial and sustained engineering investments to integrate and optimize the various components to dramatically simplify the customer experience. In the case of Oracle, a single vendor can provide an even broader solution of database, middleware and business applications that are tuned, optimized and even pre-installed on the Oracle compute, storage, and network stack.

This sentiment was validated in a recent CreditSuisse Equity Research Report which concluded, “We believe that Oracle is uniquely positioned to increase server price/performance through innovation in the software stack that cannot be replicated by hardware vendors.”

ORC International’s research panelists confirmed a common set of characteristics for optimized solutions as illustrated in Table 2.

<table>
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<th>Table 2: Minimum Characteristics of Optimized Solutions</th>
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<td>✓ All solution components are engineered, tested and optimized to work together as a highly-tuned whole solution</td>
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<td>✓ Specifically tuned and pre-configured templates ready for software and service deployments (database, middleware, business applications)</td>
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<td>✓ A centralized management capability for the entire stack, including cross chassis and cross tier management</td>
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<td>✓ A solution that minimizes the need for 3rd party add-ons and associated costs, particularly as the solution scales or changes over time</td>
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<tr>
<td>✓ A support agreement that provides single point of support for the whole optimized solution</td>
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<tr>
<td>✓ A solution that reduces complexity and risk rather than adding to it</td>
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“If you can find the vendor that can provide your entire solution, there really is very little reason to have a multi-vendor, do-it-yourself environment. You can save so much by integrating that all of the other issues associated with it are truly secondary. It’s a really good business decision to integrate and optimize everything.”

Virtualization/Solutions Architect
Fortune 500 Technology Solutions Provider

ORC International's research panelists found that the three-year blade server lifecycle expectation places more emphasis on the whole solution and the longer term implications when new hardware and software is inevitably introduced into the environment. This is yet another important benefit of placing the onus on a vendor to ensure solutions will work long term.
Oracle’s Optimized Solution vs. the HP Approach

As a market share leader in the x86 blade server market, HP is expected to be an adequate foundation for converged infrastructure or optimized solutions. In fact, ORC International’s research participants acknowledge that HP blade server products are indeed good from a standalone component perspective. However, from a truly optimized solution perspective, HP falls short of Oracle in delivering solutions with software and hardware engineered, pre-integrated and tested to work together. Simply put, it is the difference between buying an optimized solution from Oracle and building a custom solution with HP in which customers do their best to “self optimize” and support over time, or pay for expensive consulting services. The solution comparison is illustrated in Figure 1.

Specifically, study participants pointed to the following challenges with the HP approach:

- The total solution requires a multi-vendor/multi-product solution, most commonly with Red Hat for operating system, VMware for virtualization and other 3rd party applications
- The initial purchase price for HP blades is attractive, but the add-on costs are considerable when adding 3rd party infrastructure software (OS, Virtualization, Management), memory and with the expansion of additional chassis over time
- Additional add-on costs must also be considered to match Oracle solutions such as Oracle Premier Systems Support, Oracle Enterprise Manager Ops Center integration, and native HA and security features built into Oracle OSes
- Advanced capabilities such as HP Virtual Connect can in some cases disrupt traditional IT roles and cause lengthy learning curves and large training investments
- Lack of a management capability that encompasses all elements of the stack
- Requires multiple service and support elements
- Costly long term deployments – higher energy costs, more effort and higher downtime associated with blade server upgrades due to lack of hot swap I/O capability

Table 3 provides a summary comparison of the Oracle and HP blade server offerings along the key aspects of evaluation as evidenced by the IT executives and blade server expert panel interviewed by ORC International.
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<th>Comparison Aspect</th>
<th>Oracle</th>
<th>HP</th>
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| **General Approach** | • Solution-based approach  
• Optimized solution based on Oracle software and hardware engineered to work together  
• Pre-integrated and optimized on purchase – placing the onus of investment on the vendor | • Product-based approach  
• Blade system requires 3rd party components for complete solution  
• Customers integrate and “self optimize” after purchase – placing the onus of investment on the customer |
| **Implementation** | • Out of the box configuration in days as opposed to weeks or months because of pre-configuration and deployment templates  
• Easier to set up from a networking perspective, leveraging existing server and network skills and roles  
• Less dependency on training and technical documentation  
• Shorter implementation cycle | • Lack of integration and pre-configuration templates  
• Challenges traditional role of server and network administration, putting networking configuration in the hands of server admins  
• Lengthy learning curve and training costs for certain components such as VirtualConnect  
• Longer implementation cycle |
| **Manageability** | • Good management tools with Oracle Enterprise Manager (OEM) Ops Center  
• Centralized comprehensive management across chassis with OEM  
• No additional licensing required with expansion  
• OEM Ops Center is fully integrated with Oracle Premier Systems Support (at no additional cost) | • Good management tools and user interfaces at the chassis level (Insight Manager)  
• No central management tool for entire solution stack of hardware and software  
• Licensing per chassis/server adds to cost with expansion |
| **Support** | • Solution-based support model  
• Emphasis on inclusive enterprise-level support to avoid costs later on  
• Single vendor accountability eliminates finger pointing and accelerates resolution | • Component-based support model  
• Separate support agreements for hardware and software components  
• Multiple vendor support model encourages finger pointing and potential resolution delays |
| **Cost of Ownership** | • Higher initial cost for hardware  
• Comprehensive software optimized with solution results in limited add-on and expansion costs  
• Lower costs for training  
• Lower costs for unified support  
• Minimal effort and zero downtime for blade server I/O upgrades  
• Lower energy costs | • Lower initial cost for hardware  
• 3rd party and add-on costs represent 30-40% above initial price  
• Higher costs for training  
• Higher costs for disparate support  
• More effort and higher downtime for blade server I/O upgrades  
• Higher recurring costs for energy |
General Approach

HP was acknowledged by the research panel as primarily a hardware and technology company that has more of a product-oriented approach to the market. Customers purchase blade server systems from HP and then layer on other vendor’s products to create their own customized infrastructure solution. It is then largely up to the customer to invest in “self optimizing” their deployment (i.e., function as their own system integrator) to ensure that all of the components are deployed properly and continue to work together over time as changes are introduced to the environment. If one just focuses on HP blade server pricing from a product view, it might actually appear more affordable than Oracle. That is because it is comparing a product to a solution. For example, with HP companies need to factor in pricing for virtualization (VMware) and operating system (Red Hat Enterprise Linux) and the add-ons that come along with them.

In contrast, Oracle’s approach to its blade server offering is to provide a complete optimized solution with software and hardware engineered and integrated when it ships. Oracle makes a sustained engineering investment to ensure that it is easy to deploy and operate over time as the inevitable changes to hardware and software are introduced in the environment. Oracle’s optimized solution approach eliminates the cost of 3rd party add-ons, speeds up deployment, simplifies support and reduces the complexity of the environment.

For example, Oracle bundles a base Oracle Linux license with its x86 blade servers, which alone would cost $2,500 to $4,000 (US List Price) per blade per year for an equivalent HP blade server deployment. It also includes Oracle Virtual Machine (Oracle VM), which eliminates the need for a separate virtualization license. The same is also true with Oracle SPARC T4-1B blades. Oracle Solaris OS and virtualization — Oracle Solaris Containers and Oracle VM for SPARC — are included at no additional cost and fully integrated within the solution. This offers greater resiliency and enhanced security capabilities.

In the words of an IT executive for a major telecommunications cloud architecture group, “As you go down the stack with HP, there are a large amount of add-ons required to build up your system. There is always an add-on somewhere with HP. This is not the case with Oracle, they have everything you need.”

“Oracle allows customers to get their entire solution at one place. With HP you have to build your stack with multiple vendors that may not work well with each other in the configuration you choose. We find HP to be much more product oriented where Oracle is focused on solutions.”

Solution Specialist
VAR of HP/Oracle
Implementation

Given the reality of HP’s multi-vendor, multi-product solution approach, it was not surprising that interviewees found the implementations of HP blade servers longer and more costly as compared to Oracle blade servers. Compared to Oracle, HP required considerable implementation time and effort and did not offer as much in the way of configuration and deployment templates as Oracle did. As a result, HP deployments were “measured in weeks or months versus days” for Oracle. HP was recognized by interviewees as having some advanced capabilities, notably around networking with VirtualConnect. While cited as an effective capability once mastered, companies required several months of training and learning curve and an ongoing dependence on technical documentation. Interviewees cited significant requirement for training in the HP blade server environments, typically in the range of $10K to $30K per administrator. Most surprising, it caused some companies disruptions due to traditional IT skill sets and interactions between the server and networking teams. In the end, interviewees were not convinced the value of these capabilities was worthy of the investment in staffing, training and lengthened deployment times.

One major IT Solutions Provider commented, “HP comes along with integrated networking into the server side-making the server administrators responsible for configuration for the networking side which they have completely no idea how to do. This created many problems for HP. This environment can scare away many customers because it is too complex and risky to deploy.”

Those companies using Oracle optimized systems found the solution much easier to configure and deploy with far less dependence on net new training and technical documentation. They did not have the implementation effort of installing and configuring disparate applications and associated management and monitoring tools. Finally, interviewees found the networking elements of Oracle’s blade servers much easier to configure, without the need to use command line interfaces and taking advantage of Oracle’ Top-of-Rack (ToR) option for I/O assignment.
Manageability

One of the key characteristics and benefits attributed to blade servers is to simplify management by having shared services and resources for virtualization, compute, network storage and security. To fully realize the benefits, companies desire a single tool that can provide manageability to the entire stack. Companies ORC International interviewed found the management capabilities and tooling for both HP and Oracle to be very good from a product perspective, but there were some distinct differences that impacted both cost of ownership and overall manageability at the solution level.

HP’s Insight Manager was described as a very good product with an intuitive web-based UI, but interviewees cited two key disadvantages as compared to Oracle’s Enterprise Manager. First, HP Insight Manager provides management and monitoring for only part of the solution stack, which results in multiple management tools required for complete management including vCenter for VMware, OpenView or 3rd party software management, and remote management tools. For example, a blade server expert noted that, “Insight Manager is functional but it is not integrated, it is only for chassis management and basic systems operation.”

Secondly, HP Insight Manager is designed to manage a single chassis so when chassis are added to the environment, it creates a considerable add-on cost as well as the need to manage chassis independently.

In contrast, Oracle’s Enterprise Manager was also described as a very good product but was more comprehensive in addressing the full stack as well as cross-chassis management. Oracle Enterprise Manager also is included and directly integrated with Oracle’s Premier Systems Support offering, so there is no additional add-on cost when the environment scales to additional servers and chassis.

Lastly, companies cited additional benefits around on-going management across tiers when combining Oracle middleware, database and business applications and the fact that Oracle Enterprise Manager can extend centralized management all the way up the software stack.

“Oracle’s Enterprise Manager Ops Center can provide management for multiple applications and systems, the entire Oracle stack. This can reduce complexity and reduce costs. With HP you have to buy a management and monitoring tools for each part of the stack. HP’s Insight Manager is certainly as good a tool, but it’s not designed to work with other components.”

Solution Engineer
HP/Oracle Reseller
Support

Having a singular support and service capability covering the entire solution stack was commonly voiced as an important benefit for an optimized solution and an area where Oracle differentiated vis-a-vis HP’s blade server offering.

Blade servers are getting more advanced with more moving parts of software and hardware in small enclosures. When issues arise, companies want to make a single call to diagnose and resolve issues. With Oracle, interviewees touted the benefits of a “no finger pointing” support model for the solution, including both hardware and software. With solutions built on HP’s blade servers, study participants often found themselves in a multi-product, multi-vendor pickle where the software vendors pointed at HP and HP often pointed fingers at the software vendors. The result was difficulty and delays in resolving technical problems, in some cases leading to serious service outages.

The second major aspect regarding support was the economic benefit of Oracle’s Premier Systems Support, which included many elements that resulted in separate purchases in HP deployments. Furthermore, with Oracle the Enterprise Manager Ops Center management tool is integrated with Premier Systems Support meaning no additional licensing fees and also productivity gains in management and support for administrators.

According to a Solutions Architect in the study, “clients pay separately for product and software support. Even if it were HP on HP you often have to pay two service contracts. This is where you save big with Oracle, potentially 40 to 50 percent by going with Oracle.”

The final, and perhaps most unique, aspect of support is that Oracle support tools are integrated directly with the support service. The integration enables all customers to automatically get recommendations based on knowledge of their exact configuration, sending service requests on system status via the phone home capability or deploying appropriate updates and patches, all as part of the standard Oracle Premier Systems Support offering.

“I would purchase Oracle Sun Blade 6000 because I have one point of contact for my entire solution. If I have an issue I know that I need to go to Oracle. I have one tool to manage everything in Oracle Enterprise Manager. I also have one account manager who can help me decide what my future strategy is regarding my hardware and software. Our relationship is more like a partnership because they have control over a clear roadmap.”

IT Deployment Engineer
UK Healthcare Provider
Cost of Ownership

Cost of ownership has little to do with the purchase price of a product and everything to do with the cost over time for a complete solution. In terms of price, ORC International’s research panelists consistently mentioned a lower blade server product price for HP vs. Oracle’s blade server product. However, for many of the reasons provided in previous sections of this paper, interviewees were nearly unanimous in saying that the cost of Oracle’s optimized solution — what they termed “Oracle on Oracle” — was considerably less over time as compared to the cost of a cobbled solution built on the HP blade servers.

Specifically, working with HP companies found cost for add-ons in the range of 30% to 40% incremental cost above the purchase price. With Oracle, companies found that “everything came with the solution” so there were minimal add-ons even when new chassis were added to the deployment.

Implementation costs were considered higher for the HP blade servers for a host of reasons, including:

- Expensive configuration and implementation in attempts to “self optimize” the HP based solution and based on having to rely on volumes of detailed technical documentation
- The complexity and configuration issues of products such as Virtual Connect and the need for use of Command Line Interfaces (CLIs)
- A range of $10K up to $30K in training costs per administrator to get them completely certified on HP blade servers

Management software costs were typically higher for HP, particularly when expanding the deployments and adding chassis, as separate licenses were required for new chassis. Similarly, the on-going cost of managing the solution across the various tiers is higher for HP due to its disjointed nature.

Support costs were also considered much higher for HP as compared to Oracle, who is the only provider that offers a single support and service capability for the entire optimized solution, with the Oracle Enterprise Manager Ops Center tool integrated in the support offering.

“We saved around 33 percent in TCO by going with Oracle blades versus other options, including HP and Cisco. We also saved around 25 percent in energy costs over a three year period by going with Oracle.”
Senior Solutions Architect
IT Solutions Provider
Interviewees also cited an important cost of ownership benefit when it came time to service and upgrade their Oracle blade servers versus their HP counterparts. The hot swap I/O capability built into Oracle blade server Express Modules reduces the number of steps from 13 to just 6 and the service/upgrade time from over 6 minutes to just 30 seconds. The time and effort reduction was overshadowed by the elimination of the cost of downtime associated with this activity. With Oracle blade servers, there was no system downtime versus the downtime associated with HP blade servers during the duration of the service/upgrade activity.

Finally, interviewees found Oracle’s blade system effective at reducing energy costs, due to significantly lower wattage consumption as compared to HP blade servers. A virtualization systems architect related that, “Oracle blades are extremely efficient. We were able to save 55 percent on our energy costs which was a huge savings for us.” With the skyrocketing cost of energy, its share of TCO will only increase over time.

Factoring in all of these various cost categories deemed important for optimized solutions, the range of cost savings of solutions based on Oracle vis-à-vis their HP blade server counterparts was in the range of 30% to 50% among ORC International research participants.

“In the long term the ROI for Oracle is greater compared to HP. If you look at the cost savings with the integrated stack, bundled hardware and software, one monitoring tool, and less complexity in the networking compared to HP. All of these factors will make a company’s ROI much greater with Oracle compared to HP. I have experience with both HP and Oracle blades and the ROI was around 30 percent more with Oracle.”

IT Deployment Engineer
UK Healthcare Provider
Conclusion

The goal and key driver for the adoption of blade servers is to enable scalability and manageability while keeping the space and power consumption to a minimum. To support the growth expected in the private and public cloud deployments, blade servers are a viable and proven option. It can also be the most cost effective option, but only if the blade server system itself enables cost savings over time, as part of a complete solution.

Increasingly, the software workload represents a critical consideration in the design of converged infrastructure solution. As the blade systems, and the software running on them, get more sophisticated, the needs and requirements for integrating and optimizing all of the components in the solution increase.

So the question for companies deploying these systems is: Do companies want to build their own solution from a collection of components and do their best to “self-optimize” (i.e., function as their own system integrator), or are they looking for a vendor who can shoulder that load in a way that reduces costs and is sustainable over time?

Companies ORC International interviewed indicated a preference, and in many cases, a growing need for the latter. The perceived con of trusting a single vendor to provide the entire stack of virtualization, compute, storage and management capabilities was far outweighed by the savings in terms of time, money and reduced risk of having a truly optimized solution of hardware, software and management from a single vendor with a single support contact.

Companies found Oracle as the only truly optimized solution combining software and blade server hardware engineered to work together. While they considered HP a good blade server product, it fell short of Oracle when viewed as a whole software and hardware optimized solution.

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