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White Paper

The Oracle x86 Portfolio:

Competitive Advantages in Total Cost of Ownership

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Executive Summary

The ongoing costs of x86-based computing environments continue to rise while business environment challenges are increasing. Keeping TCO (total cost of ownership) in check has become imperative, so Oracle has designed and priced its new portfolio of Sun x86 server offerings to optimize performance, virtualization, and management capabilities at a significantly lower cost of ownership than either IBM or HP.

Edison's research has found TCO savings of as much as 50 percent when Oracle x86 Sun servers are compared to similarly configured models from HP and IBM. The main reason, and the major differentiator between Oracle's x86 servers versus IBM and P's, is that Oracle provides its customers with a fully-integrated x86-based stack, optimized for private cloud environments. This includes Oracle Virtualization Management, Oracle Linux, and Oracle Ops Center for Infrastructure as a Service deployment.

Oracle's server product line includes the new Sun Server X3-2, Sun Server X3-2L, Sun Blade x3-2B, both based on the newest E5 Intel architectures, along with the highly successful Sun Server X2-4 and Sun Server X2-8.

This white paper compares the total cost of ownership of the Oracle x86 systems portfolio against the relevant offerings from HP and IBM. The TCO model utilized by Edison assumes that customers of both HP and IBM will include VMware vSphere Enterprise, as well as the corresponding licenses and all support services.

Audience for this White Paper

CIOs and CFOs, as well as all IT, financial, and line-of-business executives responsible for selecting and investing in enterprise IT solutions will benefit from this research, as will those who assess total cost of ownership.

Total Cost of Ownership Model

The Total Cost of Ownership Analysis

Edison's analysis contrasts the combined costs of hardware acquisition, virtualization software licenses, Oracle Linux vs. Red Hat Enterprise Linux, virtualization support, Graphical User Interface virtualization management support, OS support, and OS management tool support. Refer to the appendices, "The Total Cost of O nership Model: Assumptions" for more detail on assumptions made about these products.

The key differentiators are management capabilities and cost of management. The tools for managing the hardware and software are important. Oracle's management tools provide continuity, a common user interface, and ease of use, each of which is beneficial.

The management tools assessed in this study include the standard products typically installed on servers. For example, the server management provided by Oracle includes single server and centralized system management tools (for support customers), such as:

- Oracle ILOM Service Processor for remote power control and management, fault detection and so forth.
- Oracle System Assistant–an embedded server setup application.
- Oracle Hardware Management Pack–tools for managing hardware from the operating system.
- Oracle Enterprise Manager Ops Center for deployment and provisioning, cloud and virtual management and more.

Both HP and IBM provide server management tools that are comparable to those offered by Oracle. HP includes HP System Insight Manager (SIM) with its servers, and IBM includes IBM Systems Director at no charge with its servers. Both of these products are part of a full suite of management offerings that cover a wide gamut of capabilities, for an extra cost.

Oracle offers a much more complete environment with their servers, including Oracle VM for virtualization and Oracle Linux as a client operating system, for just the cost of support. In contrast, IBM and HP customers must purchase VMware vSphere virtualization software and a Linux client OS–in this study, Red Hat Enterprise Linux–to achieve the same goal: a server running a hypervisor and Linux clients.

Total Cost of Ownership Comparisons

Summary

3-Year TCO: Oracle versus IBM and HP

The table below highlights the differences in the 3-year total cost of ownership for Oracle Sun Servers versus equivalent server offerings from HP and IBM. Note that the TCO for Oracle's Sun servers ranges from 30 percent to 50 percent lower than comparable products from HP, and 23 percent to 50 percent lower than those from IBM.

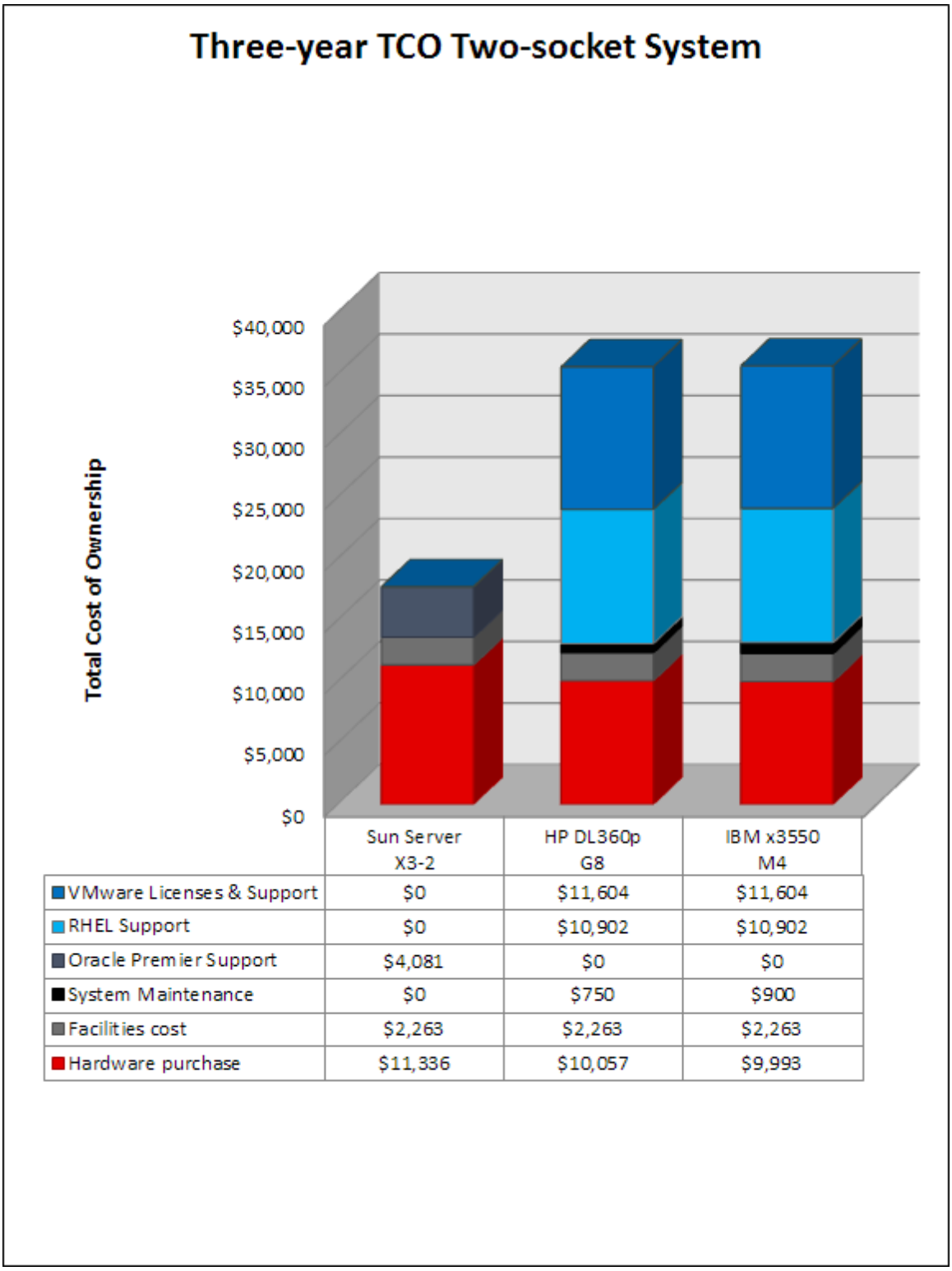
Oracle Sun Servers	3-year TCO for Equivalent Server Offerings	
	HP	IBM
Sun Server X3-2	50%	50%
Sun Server X3-2L	44%	50%
Sun Blade X3-2B	50%	48%
Sun Server X2-4	28%	29%
Sun Server X2-8	30%	23%

Total Cost of Ownership Cost Comparisons

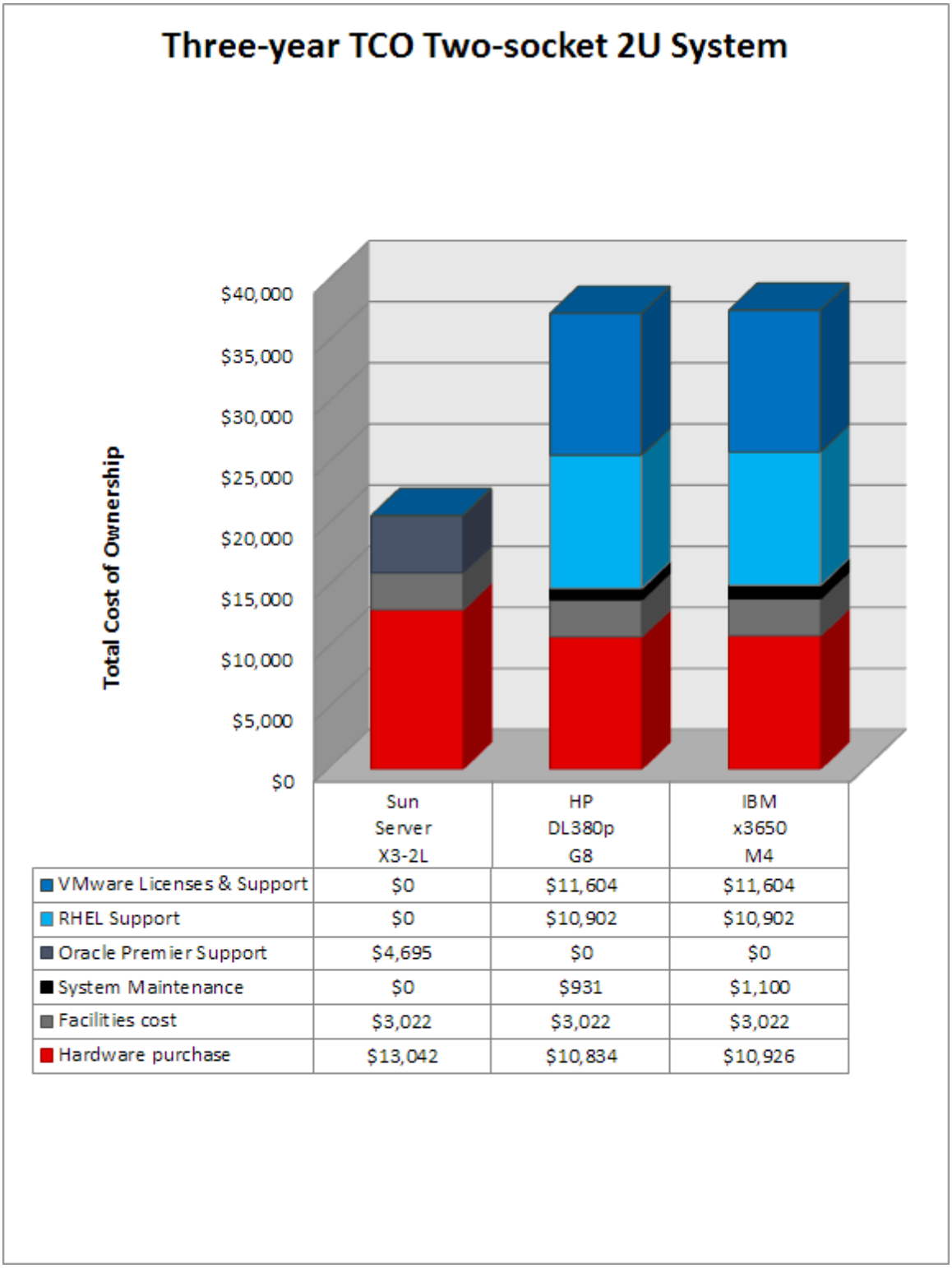
The charts on the following pages show the relative ownership costs for the three new server models. The cost factors include (a) VMware Licenses and Support, (b) RHEL Support, (c) Oracle Premier Support, Facilities Costs, and (d) Hardware Purchase Costs.

For further information on the cost factors considered, please see Edison's earlier study, Oracle x86 Infrastructure: The Optimized Stack – Reducing Total Cost of Ownership Through Vertical Integration.

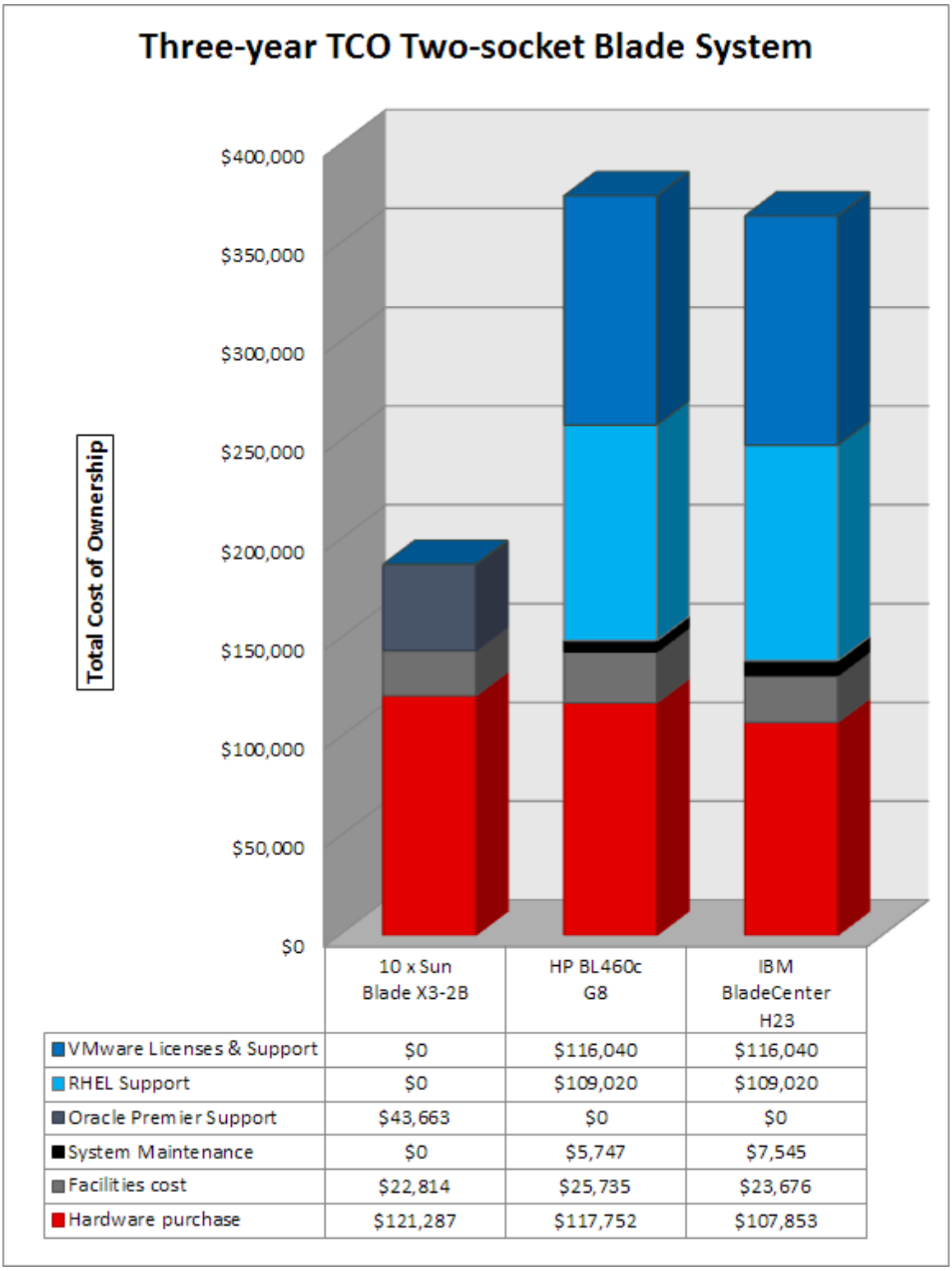
The prices for hardware, software and support used in this study were sourced from public resources and were in effect as of August 1, 2012. Prices and specifications of these products are subject to change.



	Sun Server X3-2	HP DL360p G8	IBM x3550 M4
VMware Licenses & Support	$0	$11,604	$11,604
RHEL Support	$0	$10,902	$10,902
Oracle Premier Support	$4,081	$0	$0
System Maintenance	$0	$750	$900
Facilities cost	$2,263	$2,263	$2,263
Hardware purchase	$11,336	$10,057	$9,993



	Sun Server X3-2L	HP DL380p G8	IBM x3650 M4
VMware Licenses & Support	$0	$11,604	$11,604
RHEL Support	$0	$10,902	$10,902
Oracle Premier Support	$4,695	$0	$0
System Maintenance	$0	$931	$1,100
Facilities cost	$3,022	$3,022	$3,022
Hardware purchase	$13,042	$10,834	$10,926



	10 x Sun Blade X3-2B	HP BL460c G8	IBM BladeCenter H23
VMware Licenses & Support	$0	$116,040	$116,040
RHEL Support	$0	$109,020	$109,020
Oracle Premier Support	$43,663	$0	$0
System Maintenance	$0	$5,747	$7,545
Facilities cost	$22,814	$25,735	$23,676
Hardware purchase	$121,287	$117,752	$107,853

Conclusions and Recommendations

Along with a wider private cloud initiative, server virtualization has become the standard approach for hosting and consolidating workloads on x86 servers. Most corporations have followed the same purchasing patterns for virtual server implementations they traditionally used to purchase servers and operating systems: buy servers, buy operating systems, and now, buy virtualization software. When this model is followed, each component may be acquired from a different source, and support is generally provided by the vendors for each component.

Oracle is challenging this paradigm by delivering and supporting a complete stack, consisting of server hardware, virtualization software, the virtual machine client operating system (Linux), and a suite of stack management tools.

Edison's comparison of TCO, as presented in this white paper, shows that Oracle delivers savings of 30 to 50 percent, compared to similarly configured offerings from HP and IBM. These do not include time savings resulting from having a single source for the hardware, software, and management tools, which can be considerable. Edison can strongly recommend that organizations intending to invest in a virtualized x86 environment place Oracle Sun x86 servers at the top of their vendor list.

For full details, see appendices and references, below.

Appendices and References

Further Information

The paper is an extension and update to a previous white paper published by Edison Group, July 2011: "Oracle x 86 Infrastructure; The Optimized Stack: Reducing Total Cost of Ownership through Vertical Integration."

Oracle VM and VMware Comparisons

The comparisons offered in this white paper are financial. It does not take into account the spectrum of capabilities and resources offered by Oracle VM versus VMware vSphere. For example, Oracle packs Oracle VM Templates and Oracle Enterprise

Manager with Oracle VM in its offering for integrating from physical to virtual to cloud. For a more direct side-by-side cost comparison of Oracle VM vs. VMware vSphere, visit the Oracle VM vs. VMware vSphere cost calculator. The calculator factors in the equivalent cost of acquisition of Oracle VM and vSphere, including cost of the mandatory vCenter management console from VMware.

The Total Cost of Ownership Model: Assumptions

- **Calculating Hardware Purchase Price**: All pricing in the model is based on published list prices.
- **Calculating Hardware Maintenance**: HP and IBM offer three-year warranties with their systems, with limited coverage and response times. Oracle's Premier Support includes two-hour response time. For comparison purposes: IBM offers a two-hour response time upgrade; HP only offers a four-hour response time upgrade, or a "six hour call to repair." HP's four-hour response time is the closest comparable coverage, but that response time is inferior to the offerings from Oracle or IBM.
- **Calculating Software Licenses: RHEL and VMware**: Both Red Hat and VMware have various offerings that provide different limits on licenses with either fewer included features, or limits as to what a customer can do with their software. These may include limits on the number of virtual machines, how many cores a processor can have, how much memory the system is allowed, whether various add-on features are included or not, etc. Because Oracle Premier Support is a "whole-system" approach, Oracle has none of these restrictions. Moreover, the add-on features that are optional on some plans from RHEL or VMware are included with Oracle.

  The RHEL Premium Support Plan for Production systems and VMware's vSphere Enterprise Plus licensing most closely match Oracle's Premier Support.

  Red Hat offers three-year support agreements with a slightly advantageous price point ($81/socket less per year). This pricing is used in the first three years, and the annual support costs are used in years four and five.

  VMware requires vCenter to provide a comparable GUI interface to manage VMs that comes standard with Oracle VM. The license and support for vCenter is included in the Accelerator Kit for the first three years, so just the support costs of vCenter are added in years four and five. Similarly, a customer would need to pay for Red Hat's "Smart Management" to have comparable OS managing capabilities to Oracle Linux or Oracle Solaris.
- **Power, Cooling, and Space Costs**: These did not vary significantly between vendors and were not considered.