

SAVE WITH DELL MANAGEMENT TOOLS



UP TO 45% TCO SAVINGS

DUE TO STREAMLINED MANAGEMENT AND LOWER ACQUISITION COSTS

COMPARED TO HP MANAGEMENT OFFERINGS

Initial hardware costs only reveal a fraction of the operational expenditures required to grow your IT infrastructure. Expenses such as deployment time, time to perform patches and upgrades, the costs of management tools, training-related expenses, and power and cooling are frequently far higher. The right management tools can simplify installations and upgrades and save your organization a great deal.

In Principled Technologies' labs, we analyzed the efficiency of management tools from HP and Dell in scenarios typical of a medium-sized datacenter running a mix of operating systems and hypervisors. We then used that data to show the cost of hands-on administrator time over three years using each solution to manage 100 servers and factored in the costs of acquiring the management tools required for our scenarios.

Our analysis shows that using Dell management tools in our tested scenarios could save \$102,124 to \$206,290 for 100 systems over three years, resulting in a significant decrease in costs over using HP management tools. In large datacenters, this could result in savings of over \$1M for three years (see Appendix A). Dell management tools, including iDRAC with Dell Lifecycle Controller technology, simplified administrative tasks to ensure that IT staff can finish routine management tasks quickly and spend more time on other activities.



COMPONENTS OF OUR ANALYSIS

We built our assumptions in this analysis from three main components: setup costs, management software costs, and time savings achieved in certain test scenarios we tested. Your actual results may vary and savings could increase as the number of iterations of tasks per year increases. As we discuss in detail below, we specifically analyzed the following:

- Setup costs (we assume 1 setup of each environment)
 - We measured the time to set up the applicable Dell software on SCCM and VMware vCenter Server
 - We measured the time to set up the applicable HP software on SCCM and VMware vCenter Server
- Management software costs (we assume this is a one-time cost)
 - We gathered price data for both solutions
- Time savings in certain test scenarios. We measured the time it took to:
 - Install Firmware with Dell and HP solutions (once monthly per server)
 - On VMware targets
 - On Windows targets
 - On non-managed targets
 - Deploy OS with Dell and HP solutions (once per server plus 20 percent redeployment rate)
 - On VMware targets
 - On Windows targets

STREAMLINE MANAGEMENT AND SAVE

Administrators have many challenges in keeping a large, heterogeneous server infrastructure up and running. Management tools that simplify common tasks across platforms make IT staff more productive and reduce operating costs.

We compared the acquisition costs, along with the efficiency and operational cost of using management tools from Dell and HP to manage such a mixed-platform environment. To do this, we chose a set of representative and common operational tasks and measured the time it took to perform each task. Dell management tools included embedded management using iDRAC with Dell Lifecycle Controller technology, Dell Management Plug-In for VMware® vCenter™, and Dell Lifecycle Controller Integration for System Center Configuration Manager. HP tools included HP Intelligent Provisioning, HP Insight Control for VMware vCenter Server, and HP SCCM 2007 ProLiant Integration Kit.

We timed how long it took to:

- use the Dell Management Plug-In for VMware vCenter and HP Insight Control for VMware vCenter Server plugins to perform operating system deployments and firmware updates (for VMware vSphere®-based servers)

- use the Microsoft® System Center Configuration Manager 2007 (SCCM) and associated vendor integrations to perform operating system deployments and firmware updates (for Microsoft Windows Server® 2008 R2-based servers)
- use embedded management tools to perform firmware updates on servers running other operating systems, such as Citrix XenServer or Oracle VM Server

Figure 1 compares the three-year total cost of ownership (TCO) for managing 100 servers with the offerings from Dell and HP. Our scenario paints the picture of a 100 server heterogeneous organization; therefore we include the cost of acquisition of all three technologies. Using these assumptions, Dell management tools cost 27 percent less than similar HP offerings to acquire.

Three-year TCO comparison - setup, return to service, administrative tasks, and acquisition

Figure 1: Three-year TCO for our tested scenarios, including setup, administrative costs and software acquisition costs, for the two management tool solutions.

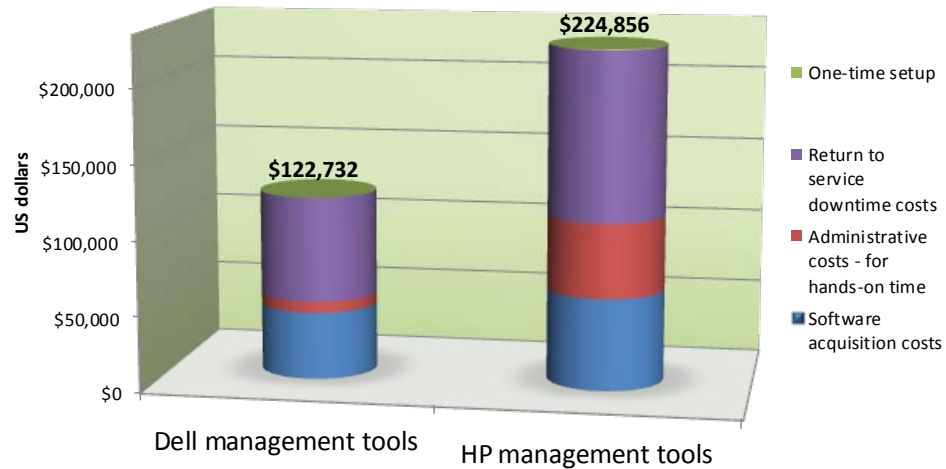


Figure 2 presents a summary of our three-year TCO analysis, including software acquisition costs, one-time setup costs, and hands-on administrative task costs for the two solutions. Per-target savings show the cost saved per server with the Dell management tools we tested.

	Dell management tools	HP management tools	Dell savings	Percent savings when using Dell versus HP	Per-target savings
Software acquisition costs	\$44,899.00	\$61,330.00	\$16,431.00	27%	\$164.31
One-time setup	\$28.00	\$771.00	\$743.00	96%	\$7.43
Administrative costs - for hands-on time	\$7,581.00	\$49,763.00	\$42,182.00	85%	\$421.82
Return to Service costs	\$70,224.00	\$112,992.00	\$42,768.00	38%	\$427.68
Total	\$122,732.00	\$224,856.00	\$102,124.00	45%	\$1,021.24

Figure 2: Summary of costs factored into our three-year TCO analysis for the two management tool solutions.

We chose to use a national average hourly rate for labor calculations, but we recognize that geographical fluctuations in salary costs would add to these costs, increasing the total savings to \$121,425 for certain metropolitan areas, resulting in per-server savings of \$1,214. Additionally, if a company chooses to use external consulting services or requires additional internal resources, these savings could increase to as much as \$206,290, or \$2,062 per server or more. See [Appendix A](#) for details.

SYSTEM MANAGEMENT COST ANALYSIS

The hidden cost of PXE

Dell's PXE-less approach circumvents the challenges and hidden costs associated with a production PXE environment. Often, organizations are reticent to deploy PXE in a production environment due to security concerns. This results in massive overspending, where separate deployment PXE-based networks exist only for the purposes of deployment. A separate network means separate switches, cables, VLAN management, racks, and possibly a separate physical space. These infrastructure and management costs for a non-production network can be substantial. By using the Dell Lifecycle Controller agent-free deployment options, you can avoid these costs and security risks.

The value of agent-free management

Dell Lifecycle Controller technologies enable a completely agent-free approach to managing your server infrastructure, no matter the operating system ecosystem. Removing server-side operating-system-based agent software removes a thick layer of complexity for administrators. No longer must administrators test agents with new OS releases, uninstall, reinstall, or manage them. This approach frees up valuable time and hardware resources.

Management software, such as the Dell Management Plug-In for VMware vCenter and the Dell Server Deployment Pack for Microsoft SCCM 2007, communicates directly with the onboard management components to perform tasks that in the past required agents.

Management in a heterogeneous world

Because many datacenters use a mix of operating systems and hypervisors, we calculated our three-year costs assuming a heterogeneous environment consisting of VMware vSphere, Microsoft Windows, and servers running neither VMware nor Microsoft operating systems which would require the use of the embedded management technologies.

For our TCO analysis, we assumed an organization with 100 physical servers powering their business applications, using VMware vSphere as the hypervisor for virtualized servers (35 servers), and a mix of Microsoft Windows Server (25 servers) and other (40 servers) operating systems, such as Linux, for bare metal servers. This is a common mix, where businesses virtualize and consolidate many less-utilized workloads to fewer hosts running a virtualization solution, while leaving some workloads on physical hosts – for either service level agreement (SLA) or legacy purposes (see Figure 3).

Server platform	Server count
VMware vSphere	35
Microsoft Windows	25
Other OS	40

Figure 3: Server type and mix assumed for our TCO analysis.

Administrative tasks and tools we used in testing

Within the framework of these assumptions, we compared the time it took to perform two common administrative tasks: deploying operating systems and upgrading firmware, specifically BIOS and storage controller firmware, using Dell management tools versus HP management tools. We tested all Dell management tools on a Dell PowerEdge™ R720xd server, and all HP management tools on an HP ProLiant DL380p Gen8 server.

Figure 4 presents the specific tools we used to deploy the operating systems in our tests, for each management tool solution. For Microsoft operating systems deployments, we used the SCCM-related tools for each vendor. For VMware vSphere deployments, we used the VMware-related tools for each vendor. For other operating system deployments, we used neither tool and did not factor this cost in, as the operating system deployment process for these servers may be highly variable and depend on the operating system.

Tools used to deploy operating systems		
OS	Dell management tool	HP management tool
VMware vSphere hypervisor	Dell Management Plug-In for vCenter	HP Insight Control for VMware vCenter Server and supporting HP components (HP Insight Control, HP Systems Insight Manager, HP Insight Control Server Deployment, HP Insight Control Deployment Connector)
Microsoft Windows OS	Dell Lifecycle Controller Integration with SCCM 2007 R3	HP ProLiant SCCM 2007 Integration Kit with SCCM 2007 R3
Other OS	N/A	N/A

Figure 4: The specific tools we used to complete each OS deployment task.

Figure 5 presents the specific tools we used to update firmware for the various servers, for each management solution. Note that for VMware vSphere, the HP Insight Control for VMware vCenter Server tool did not yet support firmware upgrades, so we used HP Intelligent Provisioning, updating firmware at the machine's console.

The Dell Lifecycle Controller Integration for SCCM could be used to target firmware updates for servers running operating systems other than Microsoft Windows, but for this scenario we used the timings relating only to the 25 Microsoft Windows Servers. After testing was completed for this report,

version 2.0 was released which allows for both firmware updates and operating system deployments of multiple types from Dell Lifecycle Controller Integration for SCCM.

Tools used to upgrade firmware		
OS	Dell management tool	HP management tool
VMware vSphere hypervisor	Dell Management Plug-In for vCenter	HP Intelligent Provisioning
Microsoft Windows OS	Dell Lifecycle Controller Integration for SCCM 2007 R3	HP ProLiant SCCM 2007 Integration Kit for SCCM 2007 R3
Other OS	Dell Lifecycle Controller	HP Intelligent Provisioning

Figure 5: The specific tools we used to complete each firmware update task.

We timed how long it took a senior system administrator to carry out OS deployment and firmware updates tasks in each of these scenarios using Dell management tools and HP management tools. Our tests measured both hands-on time and unattended time for each task, in seconds. For the purposes of the cost measurements in this report, we use only hands-on time. For more information on the complete timing measurements and the specific methodologies used in each test, see the companion reports at:

- http://www.principledtechnologies.com/clients/reports/Dell/Dell_Lifecycle_Controller2_10_12.pdf
- http://www.principledtechnologies.com/clients/reports/Dell/Dell_Management_Plug-In_VMware_1012.pdf
- http://www.principledtechnologies.com/clients/reports/Dell/Dell_Lifecycle_Controller_SCCM_1012.pdf

Administrative cost calculations

To calculate costs associated with these administrative tasks, we determined how many times an administrator would need to complete them in a three-year period, using our heterogeneous 100-server environment. We accounted for salary costs and calculated a cost-per-task, which we then applied towards our final calculations.

We approximated that administrators would perform at least one operating system installation per system, with an assumed flat redeployment rate of 20 percent over a three-year period. We assume administrators upgrade firmware each month, since updates for the individual components within a server are released independently of each other at various times throughout the year. Therefore, each server would receive at least 36 firmware upgrades in three years. Figure 6 presents the calculations we used to determine the number of OS deployment tasks required for a three-year period.

Calculations for number of OS deployments		
OS	Calculation	Number of tasks in 3 years
VMware vSphere hypervisor ¹	(35 servers) * 1.2 redeployment rate	42
Microsoft Windows OS ²	(25 servers) * 1.2 redeployment rate	30
Other OS	Did not measure	N/A

Figure 6: The calculations we used to determine the number of OS deployment tasks required in three years.

Figure 7 presents the calculations we used to determine the number of firmware upgrade tasks required for a three-year period.

Calculations for number of firmware upgrades		
OS	Calculation	Number of tasks in 3 years
VMware vSphere hypervisor ³	(35 servers) * (12 months) * (3 years)	1,260
Microsoft Windows OS ⁴	(25 servers) * (12 months) * (3 years)	900
Other OS	(40 servers) * (12 months) * (3 years)	1,440

Figure 7: The calculations we used to determine the number of firmware upgrade tasks required in three years.

To calculate the operational portion of the TCO for the management tool solutions, we researched the national average for salary plus benefits for a senior system administrator and calculated the cost per hour for that administrator.⁵ We determined the frequency of each task over three years as specified above, and calculated a cost for each task. Figure 8 presents this detailed data, which we offer more detail on as follows:

- **Administrative time per iteration (seconds)** – This shows the hands-on time it took for one iteration of each task using the management tools.
- **Expected iterations over 3 years** - We estimated how often the administrator would need to carry out these tasks over a three- year period.
- **Total hours** - We multiplied the measured times and the expected iterations and converted the result time from seconds to hours.
- **Total cost** -We multiplied that result by the cost per hour to get a cost for each task for the three-year period.
- **Total 3-year savings** --We subtracted the total cost for the Dell from the total cost for the HP and show those results here.

¹ Centralized Systems Management: Dell Management Plug-in for VMware vCenter vs. HP Insight Control For vCenter Server at http://www.principledtechnologies.com/clients/reports/Dell/Dell_Management_Plug-In_VMware_1012.pdf

² Centralized Systems Management: Dell DLCI vs. HP ProLiant Integration Kit for SCCM at http://www.principledtechnologies.com/clients/reports/Dell/Dell_Lifecycle_Controller_SCCM_1012.pdf

³ Centralized Systems Management: Dell Management Plug-in for VMware vCenter vs. HP Insight Control For vCenter Server at http://www.principledtechnologies.com/clients/reports/Dell/Dell_Management_Plug-In_VMware_1012.pdf

⁴ Centralized Systems Management: Dell DLCI vs. HP ProLiant Integration Kit for SCCM at http://www.principledtechnologies.com/clients/reports/Dell/Dell_Lifecycle_Controller_SCCM_1012.pdf

⁵ <http://www1.salary.com/Systems-Administrator-Sr-salary.html> showed a Senior System Administrator average salary nationwide salary plus benefits of \$128,270.00 in October 2012. From that, we calculate an hourly rate of \$61.67.

OS	Time for one task (seconds)		Number of tasks (3 years)	Total hours		Total cost		Total 3-year savings
	Dell	HP		Dell	HP	Dell	HP	
OS deployment								
vSphere	85	362	42	0.99	4.22	\$61	\$260	\$199
Windows	35	178	30	0.29	1.48	\$18	\$91	\$73
Firmware update tasks								
vSphere	75	875	1260	26.25	306.25	\$1,619	\$18,886	\$17,267
Windows	76	580	900	19	145	\$1,172	\$8,942	\$7,770
Other OS	191	875	1440	76.4	350	\$4,711	\$21,584	\$16,873
Total				122.93	806.95	\$7,581	\$49,763	\$42,182

Figure 8: Three-year savings in administrative costs for hand-on time for five OS deployments and firmware update management tasks.

We chose to use a national average hourly rate for labor calculations, but we recognize that geographical fluctuations in salary costs would add to these costs, increasing the total savings over three years to \$50,154 for certain metropolitan areas. Additionally, if a company chooses to use external consulting services, these savings could increase to \$85,207. See [Appendix A](#) for details.

For the HP management tools, the vCenter firmware update for VMware vSphere task time and cost equals that of the console firmware update for other operating systems because firmware updating was not supported in the version of HP Insight Control for vCenter plugin that we tested. In that case, we used the embedded HP Intelligent Provisioning interface as a fallback mechanism for performing these firmware updates.

Setup costs

We also include a one-time setup charge in our costs for each solution. In our testing, we installed the management software on the management servers and timed the process; we based costs on the amount of hands-on time it took for installation. It took our system administrator 27 minutes to set up the Dell management software and 12.5 hours to set up the HP management software. Figure 9 shows the times and costs of that setup. We use the same hourly rate for this task as for the other tasks.

One-time software setup	Total hours		Total cost		Dell savings	Dell percentage savings
	Dell	HP	Dell	HP		
One-time management server software setup	0.45	12.5	\$27.75	\$770.85	\$743.10	96%

Figure 9 One-time software setup costs.

We chose to use a national average hourly rate for labor calculations, but we recognize that geographical fluctuations in salary costs would add to these costs, increasing the total savings in setup cost labor to \$883 for certain metropolitan areas. Additionally, if a company chooses to use external consulting services, these setup cost savings could increase to \$1,501. See [Appendix A](#) for details.

Management software costs

We also researched software costs for the necessary management software the two solutions require, either on the management server itself or on the target servers. We do not include costs of potential pre-existing third-party infrastructure management tools such as VMware vCenter or Microsoft System Center Configuration Manager (SCCM). Additionally, we do not factor in the cost of hardware itself, as that is highly variable based on many outside factors unrelated to the operating expenses we discuss in this analysis. We include costs for the HP Insight Control for vCenter Server integration solution. For pricing, we used prices from the Dell, HP, and Microsoft Web sites.

Both products and their integration packages license the targets and not the management server. We installed Windows Server on management servers for HP and Microsoft SQL Server® 2012 on the HP Systems Insight Manager (SIM)/Deployment server. A separate Windows Server was not necessary for the Dell tools. Our targets include a mix of console-managed, vCenter-managed, and SCCM-managed servers. We include the required target server licenses for each type of targets.

We include license and three-year support costs for the following software for the HP solution:

- For the HP SIM/deployment server:
 - 2 licenses for Microsoft Windows Server 2008 R2 SP1, Standard Edition
 - 1 license for Microsoft SQL Server 2012
 - 2 Microsoft SQL Server 2012 client access licenses
- For the target servers, we include the following software along with three-year support:
 - For the console-managed targets : HP iLO (Integrated Lights-Out) Advanced
 - For the vCenter-managed targets: HP Insight Control

We include costs for the following software for the Dell solution:

- For the Dell target servers, we included
 - Dell Management Plug-In for VMware vCenter three-year subscription for the vCenter-managed targets
 - Dell iDRAC7 Enterprise for Dell target servers

Figure 10 summarizes management software costs. See [Appendix A](#) for details of the management costs.

Acquisition costs	Dell management tools	HP management tools	Dell savings	Dell percentage savings
Management software costs for management server	\$0	\$5,100	\$5,100	100%
Management software costs for 100 targets	\$44,899	\$56,230	\$11,331	20%
Total	\$44,899	\$61,330	\$16,431	27%

Figure 10: Management software costs.

Return to service downtime costs

In addition to routine tasks, administrators are responsible for redeploying and recovering systems that have suffered a failure. Using our test results – with hands-on and wait times – for both firmware updates and operating system deployments, we simulated a system replacement scenario by calculating the time necessary to bring a server’s firmware up to the current revisions and deploy the operating system to prepare for recovery from backup. Using this time, we then calculated business downtime costs associated with each solution.

We assume our fictional company had 2,400 employees divided evenly into 3 shifts, and the service warranties for parts replacement are identical for each vendor. We limited the impact of a single server failure to affect only 20 percent of the workforce on shift at a given time – 160 employees. Finally, we assume the average burdened salary of all employees is \$55/hour. While some servers in a given 100-server population would be highly available, we assume that all are not, and that these simulated failures occur on that subset of servers.

In our scenario, a non-clustered Windows server experiences a hardware failure and requires recovery from backup to a replacement server. The replacement server must have an OS deployed and all firmware updated to the same revisions as the server that failed, before installing the backup client software and beginning the recovery. We calculate the total cost in the situation by multiplying the total time it takes for completion of the server build⁶ and the burdened salary costs of the impacted employees that have lost all application access and cannot perform their normal tasks. We assume this type of recovery will only occur just twice a year, for a total of six times over a three-year period. Figure 11 details costs associated with downtime.

Return to service downtime comparison	Total hours		Total cost		Dell savings	Dell percentage savings
	Dell	HP	Dell	HP		
SCCM OS deployment and firmware updates – one iteration	1.33	2.14	\$11,704	\$18,832	\$7,128	38%
Total for 3 years	7.98	12.84	\$70,224	\$112,992	\$42,768	

Figure 11: Costs associated with recovery from catastrophic failure.

We chose to use an average burdened salary of all employees in our hypothetical company of \$55/hour for labor calculations in this scenario, but we recognize that geographical fluctuations in salary costs would add to these costs, increasing the total savings to \$50,851 for certain metropolitan areas. See [Appendix A](#) for details.

⁶ Centralized Systems Management: Dell DLCI vs. HP ProLiant Integration Kit for SCCM at http://www.principledtechnologies.com/clients/reports/Dell/Dell_Lifecycle_Controller_SCCM_1012.pdf

IN CONCLUSION

Choosing management tools that simplify administrative tasks can potentially save your organization a significant amount of money down the road. We found that over a three-year period, the Dell management tools offered more cost-effective solutions to our tested scenarios than did management tools from HP.

Combining the time savings of performing these routine tasks with Dell tools over HP with administrative cost projections over three years, we found an organization with a heterogeneous mix of servers could save **\$102,124** in operating and acquisition costs. By integrating Dell management tools into your datacenter, your organization has the potential to realize substantial savings when performing tasks such as those we tested.

The total savings for your company may actually be greater than presented above, as our findings only focus on the savings from limited set of simulated scenarios. Additional savings may be possible when factoring in various other potential improvements realized as a part of using Dell management tools.

APPENDIX A – COST ANALYSIS DETAILS

Labor cost ranges

We cite a \$61.67 hourly rate based on an average national salary plus benefits of \$128,270 for a Systems Administrator III from salary.com with 2,080 billable hours per year, which comes to \$493 per day. Due to regional fluctuations, this is a variable number. In addition to the national average, we determined the same position in a high cost metropolitan area and used that in our calculations. The metropolitan area we used was San Francisco⁷, with a salary plus benefits figure of \$152,524, 18.9 percent greater than national average. The geographical ranges we use in the body of the report are based off this 18.9 percent increase from the \$61.67 base.

Additionally, many companies bring in external consulting expertise for managing some IT infrastructure. For those companies, we assume \$1,000 per day per consultant, or \$125 per hour – a 202 percent increase over the national average salary plus benefits for a full time Systems Administrator III. The range we use for external consulting is based off this 202 percent increase from the \$61.67 base.

Large datacenter details

Our analysis shows that using Dell management tools in our tested scenarios could save up to \$102,124 for 100 systems over three years. In large datacenters, this could result in savings of over \$1M for three years (See Figure 12). For the purposes of this analysis, we define a large datacenter as one containing 1,000 servers in the same proportion as we used in our hypothetical 100 server analysis.

Number of servers	100	1,000
Savings	\$102,124	\$1,021,240

Figure 12: Potential savings, using salary.com for labor costs, of 100 and 1,000 servers, when using the software tools we tested in the reported proportions.

Acquisition cost details

Figures 13 and 14 detail the software acquisition costs for the HP and Dell software. We include two Windows Server licenses and two SQL Server CAL licenses on the SIM/Deployment Server, because we assume the SIM/Deployment Server components are spread across a minimum of two physical servers or two VMs. The Dell management software cost 29 percent less than the HP management software.

We assume that HP iLO Advanced is purchased for all 100 HP servers, and that Dell iDRAC7 Enterprise is purchased for all 100 Dell servers. Because HP Insight Control licenses include iLO Advanced licenses,⁸ we charge 35 servers' worth of Insight Control for the HP solution, which was necessary for our VMware vSphere testing. The remaining 65 servers only have iLO Advanced licenses.

⁷ Salary.com, February 2013

⁸ <http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c02478425/c02478425.pdf>

	Cost per unit	Quantity	Total
SIM/Deployment Server (costs include 3-year Microsoft Software Assurance)			
Microsoft Windows Server 2008 R2 SP1, Standard Edition, x64, Includes 5 CALS ⁹	\$1,398.25	2	\$2,796.50
Microsoft SQL Server 2012 Standard license ¹⁰	\$1,571.50	1	\$1,571.50
Microsoft SQL Server 2012 client access licenses ¹¹	\$365.75	2	\$731.50
SIM/Deployment server total			\$5,099.50
Console-managed targets¹²			
HP iLO Advanced including 1yr 24x7 Technical Support and Updates Tracking License	\$399.00	65	\$25,935.00
HP 3 year 24x7 iLO Advanced Pack for Non Blade Software support	\$73.00	65	\$4,745.00
vCenter-managed targets¹³			
HP Insight Control including 1yr 24x7 Technical Support and Updates Flexible Quantity License	\$549.00	35	\$19,215.00
HP 3 year 24x7 Insight Control ML-DL-BL Software Support	\$181.00	35	\$6,335.00
Target server subtotal			\$56,230.00
Total			\$61,329.50

Figure 13: HP management software purchase price.

	Cost per unit	Quantity	Total
Target servers			
Dell Management Plug-In for VMware vCenter 50 Server Limited 3-Year Subscriptions, APOS ¹⁴	\$4,999	1	\$4,999.00
Dell iDRAC7 Enterprise ¹⁵	\$399	100	\$39,900.00
Total			\$44,899.00

Figure 14: Dell management software purchase price.

⁹ We used a Windows Server 2008 software version no longer listed in the Microsoft License Advisor. We used a cost per unit found on Dell store under software options for server configurations.

¹⁰ Microsoft Open License No Level quote for a single license from Microsoft License Advisor: <http://mla.microsoft.com/default.aspx>. We included Software Assurance at one-fourth the license cost per year.

¹¹ Microsoft Open License No Level quote for a single license from Microsoft License Advisor: <http://mla.microsoft.com/default.aspx>. We included Software Assurance at one-fourth the license cost per year.

¹² HP Small and Medium Business store (find 3-year support on related products tab):

http://h30094.www3.hp.com/product/sku/3954531/mfg_partno/512487-B21

¹³ HP Small and Medium Business store, (find 3-year support on related products tab):

http://h30094.www3.hp.com/product/sku/3790441/mfg_partno/452149-B22

¹⁴ We include the 50 pack for the Dell Management Plug-In. This software is licensed by host bands, requiring a 50 pack. Source of price:

http://search.dell.com/results.aspx?s=dhs&c=us&l=en&cs=19&category_id=2999&k=Dell+Management+Plug-in+for+VMware+

¹⁵ Cost for non-blade servers: <http://search.dell.com/results.aspx?s=gen&c=us&l=en&cs=&k=idrac7+enterprise&cat=all>

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