

The Business Value of HP Insight Dynamics A Case Study on Continuous Consolidation

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Analyst: Bryan Leopard*

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Alinean, Inc. • 201 S. Orange Ave • Suite 1210 • Orlando, FL 32801-12565

Tel: 407.382.0005 • Fax: 407.382.0906 • Email: info@alinean.com • Web: www.alinean.com

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Customer Overview	1
Overview of Improvements with Insight Dynamics – VSE (ID-VSE)	1
Previous Customer Process	1
Cost Savings with ID-VSE	2
Hardware and Software Cost Savings	3
Maintenance Cost Savings	3
Facilities Cost Savings.....	3
Connectivity	4
Financial Benefits	4
Total Cost of Ownership.....	4
Return on Investment.....	6
Investment	7
About Alinean	8

Customer Overview

Gundson Goods is a fictitious manufacturer of consumer durable goods for residential and small commercial customers. The company employs 1,143 people and its headquarters are located in a metropolitan area in the United States with manufacturing plants scattered across the continent. Revenues are approximately \$250 million annually.

Gundson Goods earned a favorable reputation based on its sales of small, quality appliance products that are well-built and attractive to a wide customer base. The company creates, manufactures and designs unique utilitarian appliances, such as electric can openers, toasters, and pencil sharpeners, which are trendy and upscale in cost and design. It is important to Gundson that this well-earned reputation be maintained and improved upon.

The IT operation at Gundson Goods is responsible for the transmission, processing and storing of technical drawings, marketing materials and customer information that are all related to the design and selling of its products and the fulfillment of customer orders. Continuous interaction through the use of networks and computers takes place among the company employees to approve new product designs and rollouts and between the suppliers and the company to maintain inventory levels and delivery schedules to meet customer demand.

Quick turnaround of the necessary product design documents and rapid response to suppliers' requests for products is critical to the business. Gundson is well aware that its IT infrastructure must serve the business. Therefore, Gundson's choice of hardware and software investments, which the company relies on for its daily operations, has a significant impact on revenue and profit margins. The organization knows it is important to consider the cost of the investment and how each investment contributes to its operating costs.

Overview of Improvements with Insight Dynamics – VSE (ID-VSE)

Since Gundson Goods moved its IT environment to HP BladeSystems with Insight Dynamics – VSE, their server footprint has been reduced which brought about power, cooling and space savings. Server utilization has been increased and is better managed, allowing the IT department to balance application workloads without impacting service levels. Un-needed server purchasing has stopped due to the ability of Insight Dynamics – VSE to quickly and accurately analyze and rebalance server workloads to accommodate new applications.

The cost savings with improved IT efficiency due to HP Insight Dynamics – VSE reduced hardware, software and support costs, lowered change costs and raised business resilience.

Previous Customer Process

Over the past two years, Gundson Goods realized the need for its data center to more efficiently accommodate its business growth. IT needed to resolve server expansion and utilization issues which were negatively affecting its profit margins.

Gundson Goods had 250 HP DL380 and 25 HP DL580 servers in production, 50 of the DL380's were virtualized and running VMware. All servers ran Microsoft Windows Server 2003 Enterprise as their operating system with industry standard backup and recovery software. All of the servers attach to a storage area network (SAN).

Average server utilization for the non-virtualized servers was around 20% and 40% for the VMware virtualized servers. The higher utilization on the virtualized servers resulted from consolidating

multiple workloads onto each server. However, as the workloads grew and changed, after the initial consolidation, workload peaks on any given virtualized server often occurred at the same time. Very conservative utilization rates were maintained on the virtualized servers to avoid the overlapping workload peaks exceeding the servers' performance which would result in poor response times and degraded service levels. This caused the data center staff to purchase additional servers, beyond the natural growth of the business to keep up with peak application usage demand. The costs for purchasing the hardware, software and maintenance contracts started to strain the IT budget, not allowing Gundson to operate strategically.

Server growth also created network issues and too much time was spent coordinating local area network (LAN) and storage area network (SAN) connectivity. It took several hours to several days for the IT staff to assign IP addresses to new servers and worldwide ids to its users. Gundson needed a better solution to expedite this process.

Gundson also had data center facility issues. Energy costs were a growing concern for the IT department. As the server base grew, the costs for powering and cooling the servers continued to grow. Their real concern was that IT would need to upgrade the air conditioning systems in the data center. This was not an option as it would be cost prohibitive.

The company had a mandate to be environmentally friendly; however the IT department did not know how its data center impacted the environment. IT knew that if they reduced the server footprint, positive impacts would result due to a decrease in power consumption and by not having to dispose of excess out-dated hardware in the future. Additionally, the data center was reaching its space capacity limits. Consolidation would reduce the amount of servers required to support the business, as well as reduce the data center's environmental impact.

The IT staff knew that virtualizing more of their servers would reduce server sprawl by raising overall utilization rates. Gundson hired an outside service to collect and analyze utilization data for the servers to be consolidated. The service proved to be very costly and took a long time to complete. This limited the analysis to once per major consolidation project which was happening once per year on average. Since the workloads would continue to grow and change at different rates, it was clear that more frequent capacity analysis and workload rebalancing was necessary to achieve maximum utilization efficiency while maintaining service levels.

The IT department already used a variety of management tools for hardware monitoring, software deployment and virtualization which added complexity and required more administrators to manage the data center. Since Gunderson had to contain costs, hiring additional staff was out of the question.

IT needed an answer that would consolidate the servers effectively, reduce overhead and manage the entire operation from one management solution.

Cost Savings with ID-VSE

Previously once per year consolidation efforts, combined with ever changing workloads meant any capacity analysis quickly became out of date. To prevent performance problems and degraded service levels, Gundson Goods' IT department was forced to be overly conservative when consolidating existing workloads or when adding new applications into the environment. This forced Gundson to purchase more servers than was necessary. So, Gundson decided to use the real-time capacity planning delivered by HP Insight Dynamics – VSE to help them make better decisions about how to consolidate.

With Insight Dynamics – VSE's real time capacity planning, Gundson can now accurately size the needed initial HP BladeSystem environment and significantly reduce the hardware footprint in the data center. With Insight Dynamics – VSE's "logical server" capabilities, Gundson is able to move physical

and virtual workloads around to accommodate new applications into the existing environment without having to purchase more physical servers. It also allows them to rebalance workloads easily and efficiently as application workloads fluctuate. With Insight Dynamics – VSE, they are able to easily assess their server capacities and move the workloads to continuously optimize the utilization of their server resources and maintain higher service levels for all their applications.

Hardware and Software Cost Savings

When Gundson Goods moved to the new environment, the book value of their old servers was \$501,984. Factoring growth and obsolescence replacements, their projected five year total cost of ownership for their hardware environment, including software, was \$4,655,974. With the new environment of HP BladeSystem servers and Insight Dynamics – VSE, their hardware and software cost was reduced to \$1,828,323 over a projected five year total cost of ownership. At the end of the five years Gundson Goods would have needed approximately 444 servers in their environment if they continued with their existing processes. The initial consolidation and ongoing optimization capabilities of Insight Dynamics – VSE, enabled Gundson Goods to reduce their projected total server count after five years to 137 HP BladeSystem Servers. During the initial capacity analysis, the 25 DL580 servers in the previous environment were found not to be good candidates for conversion to virtual machines. Therefore their workloads were moved to 25 HP BladeSystem servers without being virtualized.

Over the five year analysis period, the hardware and software costs including initial procurement and ongoing maintenance for HP- BladeSystems and software showed a 61% savings over Gundson Goods' previous environment

Maintenance Cost Savings

Because Insight Dynamics – VSE helped Gundson Goods reduce their hardware and software footprint, they reduced other operational costs in the data center. Hardware and software maintenance was reduced by 56%. Previously, IT was paying \$675,000 on average, annually for hardware and software maintenance and a five year projected total cost of \$3,390,755. With Insight Dynamics – VSE they are now paying \$297,000 on average, annually with a projected five year total cost of ownership of \$1,487,891. The five year ownership costs include a 10% growth in server workload requirements.

Facilities Cost Savings

Gundson Goods was also able to achieve savings in the facilities costs of power, cooling and data center space, due to the reduction in hardware and the superior reduced power and cooling consumption of HP BladeSystem over traditional rackmount servers. Previously, Gundson Goods had an annual average cost of \$429,983 for power and cooling and \$15,829 for facilities space. The projected five year total cost of ownership for power and cooling was \$2,149,914 and \$79,147 for facilities space. Now with Insight Dynamics – VSE and HP BladeSystem their annual cost is \$69,921 for power and cooling and \$2,422 for facilities space. The projected five year total cost of ownership for power and cooling is \$349,607 and \$12,110 for facilities space. Moving to HP BladeSystem and Insight Dynamics – VSE gave them an average of 84% savings for power, cooling and facilities space costs. Gundson Goods was also very concerned with its carbon emissions impact on the environment. By reducing their server footprint and their electricity consumption, they were able to reduce their carbon emissions impact by nearly 13,000 metric tons of carbon dioxide, an 84% savings. This is the same as removing approximately 2,380 cars from the road for one full year.

Connectivity

Prior to moving to the new environment, the network connectivity consisted of the servers connected to an edge switch which was connected to data center core switches. The SAN connectivity consisted of the servers connected to a SAN switch which connected to the SAN. This resulted in a lot of cables and switches. Due to the hardware reduction and the superior connectivity of HP BladeSystem with Virtual Connect, they were able to not only reduce the number of cables in the environment, but the number of data center ports needed. The five year total cost of ownership for network connectivity before moving to the new environment would have been \$188,584 and \$386,400 for SAN connectivity. Their new projected five year total cost of ownership for network connectivity is \$104,832 and \$185,382 for SAN connectivity. A savings of 44% was achieved for network connectivity and 52% for SAN connectivity.

Managing the old server environment posed several issues for the IT department. They had several different applications to manage their hardware and software. Managing the environment consumed the majority of the administration's time and left little time for working on value added projects for the company. With Insight Dynamics – VSE, Virtual Connect, Virtual Connect Enterprise Manager and HP BladeSystem, this problem was solved. First, by reducing the number of servers they also reduced the number of mundane tasks that needed to be performed. Plus, with the automation capabilities of Insight Dynamics – VSE, most of these manual tasks were automated – freeing more of administrators time. Managing the hardware and software is also more efficient because the administrators can now manage hardware, software and virtual machines through a single management console. This reduces time spent managing each separate entity. With Virtual Connect technologies, the IT department can configure the LAN and SAN environment with the help of the LAN and SAN administrators one time. After that, they are now able to move, change and even replace servers through the use of the same single console without resetting the LAN and SAN settings. The total projected savings after five years for server management is over \$1 million (an 85% savings). By moving to HP BladeSystems, the management environment of Insight Dynamics – VSE and Virtual Connect, server downtime was reduced, which translated to a 71% reduction in the cost of business downtime.

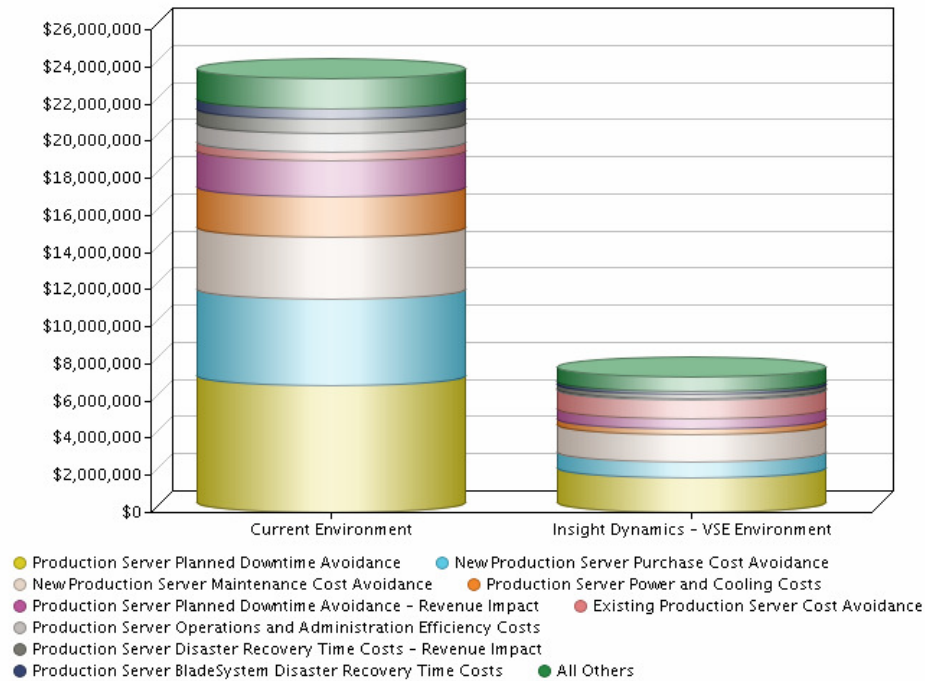
Financial Benefits

Total Cost of Ownership

The projected five year total cost of ownership for Gundson Goods' previous rackmount server environment was \$23,383,163 versus the projected \$7,266,883 cost for their new HP BladeSystem and Insight Dynamics – VSE environment, a savings of 69%. This includes hardware and software savings, maintenance cost reductions, reduced facilities costs as well as improved downtime savings. The direct cost savings for the HP Insight Dynamics environment is \$8,716,601 and the total indirect savings is \$7,399,679.

TCO Comparison Cumulative 5 Year	Continuation of Existing Environment	Insight Dynamics - VSE Environment	Difference (A - B)	Difference (A - B)%
IT Costs				
Server Costs	\$5,157,958	\$1,828,328	\$3,329,630	65%
Server Maintenance Cost Avoidance	\$3,390,755	\$1,487,891	\$1,902,864	56%
Server Power and Cooling Costs	\$2,149,914	\$349,607	\$1,800,307	84%
Server Space Costs	\$79,147	\$12,110	\$67,037	85%
Server Networking Costs	\$188,584	\$104,832	\$83,752	44%
Server San Connectivity Costs	\$386,400	\$185,382	\$201,018	52%
Server Virtual Connect Labor Costs	\$34,305	\$2,669	\$31,636	92%
Server Deployment Costs	\$425,309	\$84,918	\$340,391	80%
Server Operations and Administration Efficiency Costs	\$949,842	\$119,771	\$830,071	87%
Carbon Emissions Reduction	\$155,120	\$25,225	\$129,895	84%
Total IT Costs	\$12,917,334	\$4,200,733	\$8,716,601	68%
Business Operating Costs				
Production Server Planned Downtime Avoidance	\$6,807,219	\$1,850,324	\$4,956,895	73%
Production Server Unplanned Downtime Avoidance	\$90,099	\$72,081	\$18,018	20%
Production Server BladeSystem Disaster Recovery Time Costs	\$512,399	\$172,284	\$340,114	66%
Total Business Operating Costs	\$7,409,717	\$2,094,689	\$5,315,027	72%
Business Strategic Costs				
Production Server Planned Downtime Avoidance - Revenue Impact	\$1,932,950	\$525,410	\$1,407,540	73%
Production Server Unplanned Downtime Avoidance - Revenue Impact	\$314,834	\$256,264	\$58,570	19%
Production Server Disaster Recovery Time Costs - Revenue Impact	\$808,328	\$189,786	\$618,542	77%
Total Business Strategic Costs	\$3,056,112	\$971,460	\$2,084,652	68%
Total	\$23,383,163	\$7,266,883	\$16,116,280	69%

TCO Comparison – 5 Year Cumulative



Return on Investment

Gundson Goods experienced a return on investment of 247% with a breakeven period of 6 months with a total investment of \$2,432,719 for server hardware and software purchases, Insight Dynamics – VSE licenses, and network and SAN connectivity. A net present value was projected to be \$7 million over the five year analysis period using 9.5% as the cost of capital.

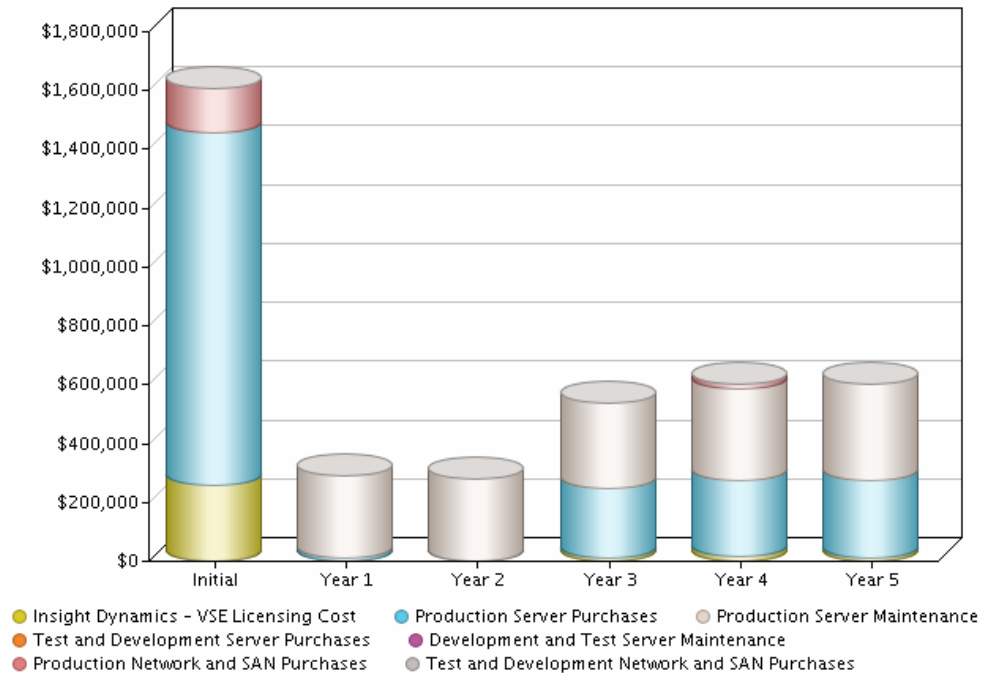
ROI Analysis (Solution B) (Probable Case)	Initial	Year 1	Year 2	Year 3	Year 4	Year 5
Benefits (to Solution B from Current (AS IS))	\$0	\$2,576,356	\$2,401,929	\$2,614,468	\$2,852,209	\$3,142,814
Cumulative Benefits		\$2,576,356	\$4,978,285	\$7,592,753	\$10,444,962	\$13,587,777
Investment (Solution B)	\$1,606,213	\$289,230	\$278,606	\$539,382	\$603,552	\$603,627
Cumulative Investment	\$1,606,213	\$1,895,443	\$2,174,049	\$2,713,431	\$3,316,983	\$3,920,610
Cash Flow	(\$1,606,213)	\$2,287,126	\$2,123,323	\$2,075,086	\$2,248,657	\$2,539,187
Cumulative Cash Flow	(\$1,606,213)	\$680,913	\$2,804,236	\$4,879,322	\$7,127,979	\$9,667,167
ROI	247%					
Risk-Adjusted ROI	211%					
NPV Savings	\$7,010,929					
IRR	136%					
Payback period (including deployment period)	6 month(s)					
Risk-Adjusted Discount Rate	9.5%					

Investment

Gundson Goods initial capital investment in the new server environment was \$1,606,213 and consisted of server hardware and software purchases, Insight Dynamics – VSE Licensing, and LAN and SAN connectivity with a total projected investment after five years of \$2,432,719. The operating expenditures totaled \$1,487,891 in server hardware and software maintenance expenditures.

Investment Summary	Initial	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Total Investment	\$1,606,213	\$289,230	\$278,606	\$539,382	\$603,552	\$603,627	\$3,920,610
Capital Investment							
Server Purchases	\$1,198,804	\$9,129	\$0	\$237,577	\$257,653	\$263,259	\$1,966,422
Insight Dynamics - VSE Licensing Cost	\$255,425	\$1,495	\$0	\$8,970	\$17,465	\$11,960	\$295,315
Network and SAN Purchases	\$151,984	\$0	\$0	\$0	\$18,998	\$0	\$170,982
Total Capital Investment	\$1,606,213	\$10,624	\$0	\$246,547	\$294,116	\$275,219	\$2,432,719
Operating Investment							
Server Maintenance	\$0	\$278,606	\$278,606	\$292,835	\$309,436	\$328,408	\$1,487,891
Total Operating Investment	\$0	\$278,606	\$278,606	\$292,835	\$309,436	\$328,408	\$1,487,891

Investment



About Alinean

Since 1994, the Alinean team has been the pioneering builder of tools to help quantify and improve the ROI and TCO of IT investments. Alinean was named for the Spanish word for "Align", matching the Alinean mission as the leading developer of analytical tools to help IT vendors, consultants and IT executives align IT investments with business strategies.

The Alinean team has over a decade of experience in the practical development and application of ROI and TCO methodologies, models and tools to optimizing IT investment decision making. In 1994, the Alinean team formed Interpose, the original pioneers of ROI tools, developing analytical software for over 50 major IT vendors and consulting companies worldwide, and creating the industry standard TCO Manager and TCO Analyst software. Interpose was sold to Gartner in 1998, where the team continued their developments and marketing of ROI and TCO software tools. The original team reunited to form Alinean in 2001, once again becoming the leading pioneers and developers of ROI sales and analytical tools. Current customers include leading IT solution providers such as HP, IBM, Dell, Intel, Symantec, NetIQ, EMC, SAP, Oracle, SBC, and Microsoft, as well as leading consultancies and Global 1000 companies.

Additional information about Alinean and helpful ROI educational resources can be found at <http://www.alinean.com>