

# Total Cost of Upgrading HP OpenVMS Environments to HP Integrity i2 Server Blades

**Detailed quantitative analyses of costs and benefits associated with upgrading out-of-warranty HP AlphaServer and HP Integrity servers running OpenVMS to OpenVMS V8.4 on new Integrity i2 server blades.**

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## Executive Summary

For many years companies in a wide variety of industries have chosen to run their business-critical applications in an OpenVMS® environment. Many studies have proven that OpenVMS running on AlphaServer® or Integrity® servers offers superior reliability and Total Cost of Ownership. HP® recently introduced three new server blades based on the Intel® Itanium® processor 9300 series. The HP Integrity BL860c i2, BL870c i2, and BL890c i2 offer up to twice the application performance of older Integrity blades with the same number of sockets. In addition, HP just released OpenVMS V8.4. This latest version of the operating system includes new features as well as support for the new Integrity i2 blades. This paper does not discuss the technical details or specific benefits of these new blades and OpenVMS V8.4. Rather, this paper provides a detailed Total Cost of Upgrade™, or TCU™, analysis for upgrading OpenVMS AlphaServer and older OpenVMS Integrity systems to OpenVMS V8.4 running on Integrity i2 blades. It quantifies the costs and benefits from the upgrade and provides detailed cash flow analyses for three upgrade and two consolidation scenarios. The analysis shows that there are very compelling reasons for companies to consider these upgrades and consolidations. **In all five scenarios the payback period is one year or less.**

Three sources of information were used for this paper. First, results from previous TechWise Research studies that surveyed companies for the operational characteristics of AlphaServer and Integrity OpenVMS environments. Second, the analyses include system and service pricing data from IDEAS International. Finally, HP provided performance data as well as out-of-warranty support costs. The analyses identified multiple ongoing savings that can offset the initial cost of the new blades. Potential savings include reduced costs for HP service contracts, system management, downtime, energy, and Oracle support costs.

**It is very interesting to note that all of the scenarios resulted in a significant reduction in energy usage.** On a percentage basis the reductions ranged from 51% to 87%. Three of the scenarios would save over 10,000 kWhr a year. In addition, all of the scenarios leave significant room for expansion. The new blade enclosures can accommodate one or more additional blades in future years to expand capacity.

Each company has unique criteria to consider when deciding whether or not to upgrade their OpenVMS environments. The age-old adage of "if it ain't broke, don't fix it" often does not apply. HP has taken steps to make the upgrade decision easier and attractive. Any company that plans on using OpenVMS for the foreseeable future should evaluate HP's new Integrity blades. **The upgrade has the potential to pay for itself in one year or less, lower annual support and operating costs significantly, improve system performance, and offer the ability to easily expand capacity in the future.**

## Brief History of OpenVMS

OpenVMS was introduced 33 years ago and has grown to become a leading environment for business-critical applications. During its history OpenVMS has run on three different platforms: VAX, AlphaServer, and Integrity. From 1977 until the early 1990s OpenVMS ran on the VAX platform. Starting in 1994, a functionally equivalent version of OpenVMS (version 6.1) was available for the AlphaServer platform. Finally in 2005 OpenVMS V8.2 was introduced with support for HP Integrity servers. HP stopped selling AlphaServers in April 2007. The last three models sold were the AlphaServer ES47, ES80, and GS1280. HP will continue to support OpenVMS running on AlphaServer through at least 2012.<sup>(1)</sup>

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## Highlights

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**Many companies rely on OpenVMS environments for their business critical applications.**

**In 2010 HP introduced new Integrity blades and an updated version of OpenVMS.**

HP had two major product introductions in 2010 that will extend the life of the OpenVMS environment for many years. First, HP introduced new server blades based on the Intel Itanium 9300 processor series. The three new Integrity i2 blades include the Integrity BL860c i2, BL870c i2, and the BL890c i2. These new blades offer approximately twice the performance of the previous blade models with the same number of sockets. Second, HP introduced OpenVMS 8.4 which offers improved performance when running on HP's new Integrity i2 server blades. Some new features that enhance performance include; improvements to DLM (Distributed Lock Manager), new support for Integrity RAD (Resource Affinity Domains), TCP/IP enhancements, and AVIO (Accelerated Virtual I/O) for Integrity Virtual Machine. Applications that run on OpenVMS V8.3 will also run on OpenVMS V8.4 due to binary compatibility of applications. OpenVMS V8.4 also offers dozens of other features designed to improve networking, hardware management, security, UNIX portability, system management, and virtualization. The technical aspects of these new features are beyond the scope of this paper. Readers are encouraged to visit HP's website to learn more about [OpenVMS V8.4](#).

Several studies by TechWise Research<sup>(2)</sup> have quantified the reliability of AlphaServer OpenVMS and Integrity OpenVMS environments. Customers can count on their current AlphaServer and Integrity systems<sup>(3)</sup> to function reliably for many years into the future. How then could it make sense for customers to upgrade their AlphaServer and older Integrity servers to HP's new Integrity i2 blades running OpenVMS V8.4? It is true that in some situations, such as AlphaServer installations in nuclear reactors or in aircraft, the risk of disturbing the system during an upgrade is too great. For many AlphaServer and some older Integrity environments, however, the age-old adage of "if it ain't broke, don't fix it" does not apply. This paper includes analyses of three upgrade and two consolidation scenarios. The results show that for many customers using these older systems, the decision to upgrade to OpenVMS V8.4 running on HP Integrity i2 blades is a sound one, from both financial and strategic perspectives.

(1) Much of the historical data comes from Wikipedia, "the free encyclopedia."

(2) Total Cost of Ownership white papers, TechWise Research, various dates.

(3) Note: All references to AlphaServer and Integrity refer to OpenVMS operating environments.

## TCU Scenarios Analyzed

Every customer with an OpenVMS environment has a unique installation when it comes to the number and models of AlphaServer and/or Integrity servers deployed. Furthermore, for every conceivable combination of systems, there are several potential upgrade paths. Some could include a one-for-one exchange where a single AlphaServer or Integrity is upgraded to one of the new Integrity i2 blades. Others scenarios could involve a consolidation where multiple systems are upgraded to a reduced number of Integrity i2 blades. TechWise Research approached HP for typical upgrade scenarios it is seeing in the marketplace. The first three scenarios provided by HP are one-for-one upgrades. The first two of these upgrade a midrange AlphaServer to an entry-level BL860c i2 while the final scenario upgrades an enterprise-class AlphaServer to an enterprise-class BL890c i2.

### Highlights

TechWise Research analyzed five different upgrade scenarios for this paper.

Three scenarios involved upgrading a single AlphaServer to one Integrity i2 blade.

Two scenarios involved consolidating multiple servers into one Integrity BL870c i2 using HP Virtual Machine.

### Configurations for Three One-for-One Upgrade Scenarios

Original AlphaServer Configuration		Upgraded Integrity i2 Blade Configuration
AlphaServer ES80 1150MHz 8 chips (8 cores) 16GB RAM	➡	Integrity BL860c i2 2 chips (8 cores) 16GB RAM
AlphaServer ES47 1150MHz 4 chips (4 cores) 16GB RAM	➡	Integrity BL860c i2 2 chips (8 cores) 16GB RAM
AlphaServer GS1280 1300MHz 32 chips (32 cores) 128GB RAM	➡	Integrity BL890c i2 8 chips (32 cores) 128GB RAM

HP also provided the following two multi-server consolidation scenarios:

### Configurations for Two Consolidation Scenarios

Original Multi-Server Environment Configuration		Consolidated Integrity i2 Blade Configuration
5 AlphaServer DS25 servers 2 chips each (10 total cores) 2GB RAM each (10GB total)	➡	Integrity BL870c i2 4 chips (16 total cores) Using HP Virtual Machine
10 rx3600 servers* 4 chips each (40 total cores) 16GB RAM each (160GB total)	➡	Integrity BL870c i2 4 chips (16 total cores) Using HP Virtual Machine

\* The analyses assumed the rx3600 servers were out of their original warranty

As shown above, it is possible to consolidate multiple AlphaServer or Integrity servers that are running OpenVMS into a single Integrity BL870c i2 blade by using HP Virtual Machine.

### Two Sides to the TCU Equation

There are two sides to the equation that TechWise Research developed to quantify the total cost of upgrading an out-of-warranty OpenVMS AlphaServer or Integrity system running OpenVMS to OpenVMS V8.4 running on an Integrity i2 blade. These are the upfront costs companies would pay at the beginning of the upgrade process and the potential ongoing savings once the new blade is running in production.

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### Highlights

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**In a Total Cost of Upgrade (TCU) analysis, the initial upfront costs of the acquisition are offset by potential ongoing savings. This analysis will identify at what point in time the upgrade breaks even from a cash flow perspective.**

#### Upfront Costs

- Integrity Blade: The cost to purchase the Integrity i2 blade and enclosure configured with the desired amount of memory and storage.
- Installation: The time and/or money spent installing the new blades.
- Training: The time and/or money spent learning to use the new blades.
- Operating System: The cost to acquire the license for OpenVMS on the Integrity blade.
- Third-Party Software: The cost to transfer licenses of any third-party application from the old systems to the new blades.
- Custom Applications: The cost to port custom applications to OpenVMS V8.4 running on Integrity i2 blades.

#### Potential Ongoing Savings

- Support Contracts: This is the difference, if any, between the costs of a support contract on the older system versus the new Integrity blade.
- Management Costs: This is the difference, if any, in the time and costs spent managing the servers on an ongoing basis.
- Downtime Costs: This is the difference, if any, in the downtime costs between the old AlphaServer/Integrity and the new blade.
- Energy Costs: This is the difference, if any, in the ongoing power and cooling costs between the old AlphaServer/Integrity and the new blade.
- Space Utilization: This is the difference, if any, in the floor space requirements between the old AlphaServer/Integrity and the new blade.

### Quantifying Upfront Costs

#### Server Acquisition

Current system and service pricing was obtained from IDEAS International, a recognized leading authority on systems technology. IDEAS specializes in the research of comparative information on computer systems. When buying servers, customers can pay very different prices for identical servers depending on when they buy them, and on the level of discount they can negotiate from their channel. In order to eliminate any timing or discount bias from the analyses, no discounts were applied to these prices. Very few companies, however, pay list price for their servers. Our approach is very conservative because it may include pricing that is higher than what companies would actually pay.

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### Highlights

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**This study focuses on upgrading older systems to new Integrity blades. HP allows customers to transfer their OS license to new systems. This eliminates any purchasing costs associated with OpenVMS.**

**TechWise Research used a conservative approach in this analysis. For example, list prices were used without any channel discount. In addition, the residual value of the old system is ignored.**

#### Installation and Training

TechWise directly measured installation and training costs in previous studies by interviewing companies that have installed Integrity servers. These costs tend to be relatively small because most OpenVMS system administrators are very knowledgeable about the operating system and already have experience managing Integrity servers.

#### Operating System License

The cost to license the OpenVMS operating system for an Integrity blade can run in the tens of thousands of dollars, depending on the system configuration. For many customers upgrading an AlphaServer or out-of-warranty Integrity, however, this cost will be zero. This is because HP has a program that allows customers with current OpenVMS support contracts to transfer licenses from old systems to new HP Integrity servers at no charge. Based on past research, most OpenVMS customers have an OpenVMS support contract with HP. For this reason, TechWise assigned a zero cost for the Integrity i2 blades' OpenVMS licenses in the TCU analysis.

#### Third-Party Application License

There are literally hundreds of third-party applications available for OpenVMS. Each software vendor has its own policy regarding hardware upgrades. In past studies TechWise Research investigated four of the most popular third-party applications among OpenVMS users: Oracle Server, Oracle Rdb, BEA MessageQueue, and IBM WebSphere MQ. In those past studies we learned that as long as a customer has a support contract with their respective software vendor, they can transfer their license to the new Integrity server at no cost. This same assumption was used for this paper.

#### Custom Application Porting

Some OpenVMS customers have developed custom applications. These custom applications running on AlphaServer may need to be "ported" to run on OpenVMS V8.4 and Integrity. The process of porting custom code from AlphaServer to Integrity will be relatively easy for most companies. This is because the Alpha and I64 (Itanium) versions of OpenVMS are built and maintained using a common source code library. Porting may only require a simple recompile and re-link to run on OpenVMS Integrity. Applications that already run on OpenVMS V8.3 will run on OpenVMS V8.4 due to binary compatibility of applications. Of course, not all applications will port over this easily. In this paper TechWise did not include any costs associated with custom application porting.

#### Residual Value

Both AlphaServer and Integrity servers have proven to be very reliable from a hardware perspective. One factor not addressed is the residual value of the old server(s) being upgraded. It is difficult to estimate the value of an AlphaServer ES47, for instance, because so many variables affect the value. Rather than estimate this value, this paper's analyses uses a conservative approach that does not factor in any residual value for the old servers.



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### Highlights

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**Upgrades that involve out-of-warranty systems often result in significant savings in support contract costs. These savings alone pay for the new servers in a year or two.**

**The new Integrity i2 blades and OpenVMS V8.4 were just released. Customers have not had these systems in production long enough to measure operational characteristics.**

**The analysis assumes the new servers and OS have the same operational characteristics as other Integrity servers running OpenVMS 8.x.**

### Quantifying Ongoing Savings

#### Support Contract Costs

All five scenarios assume the server(s) being upgraded are more than three years old and are beyond their original warranty period. As a result, support contracts represent one area of potential savings for companies that wish to upgrade out-of-warranty AlphaServer and Integrity systems to new Integrity i2 blades. These savings can be significant. In Scenario #1, for example, an AlphaServer ES80 is upgraded to an Integrity BL860c i2 blade. The annual cost for a 7x24 4hr service contract covering hardware and software on an AlphaServer ES80 is approximately \$37,000. The same contract on a new Integrity BL860c i2 blade costs \$1,800 per year. The support cost saving alone will pay for the new blade in less than a year.

#### Management Costs

In several past studies TechWise Research surveyed customers to gather operational data for AlphaServer and Integrity servers. One area measured in detail is the cost to manage the servers on an ongoing basis. The results of these studies show that Integrity servers, on average, require fewer hours to manage than AlphaServer systems. This translates into a reduction in annual management costs that are included in the TCU analyses.

#### Downtime Costs

System availability is often an important factor in determining the total cost of upgrading a system. Some companies would lose significant dollars in terms of lost sales and employee productivity if their OpenVMS environment went offline. For a stock exchange or major online retailer these losses could be millions of dollars for each hour of downtime. A system crash at an airline or nuclear reactor could lead to loss of life. For these reasons, system availability must be considered in most upgrade decisions. Previous TechWise studies measured average downtime for AlphaServer and Integrity systems. Many different factors can cause downtime. The analyses in this paper focus on unplanned downtime caused directly by the server hardware itself because this is the only factor that changes after the upgrade. From a hardware perspective, AlphaServers have been shown to be very reliable. Previous TechWise studies have shown that Integrity servers are even more reliable than AlphaServers, averaging one less hour per year of unplanned downtime due to the server hardware. This difference in system availability is also included in the TCU analyses.

Ideally, TechWise would survey companies that have Integrity i2 blades running OpenVMS V8.4 in a production environment for six or more months to collect operational data for these new systems. At the time of writing of this paper it is not possible to do this because the blades and OpenVMS V8.4 were just released. As a result, TechWise assumed that the new blades would have the same management and downtime costs as other Integrity servers.

## Highlights

**Upgrades have the potential to lower energy costs and improve space utilization.**

**In terms of space utilization, each of the five scenarios leaves considerable room for growth. The blade enclosures have room for between 1 and 7 additional blades, making it easy for future capacity expansion.**

### Energy Costs

For the past several years TechWise Research has added energy costs into its TCU analysis. Thanks to the ever increasing cost of energy, the cost to run a server and cool the server room can no longer be ignored. Several years ago Bart Perkins of ComputerWorld commented, "In some markets, the electricity bill for a server facility can run four to six times the cost of renting the building space." This statement likely holds true today given current economic conditions. Most companies are taking steps to be "green." As a result, energy costs are included in the TCU analyses.

### Space Utilization

Finally space utilization, although important, is difficult to include in any TCU analyses. This is because the upgrade from AlphaServer to Integrity i2 blade will have different impacts on floor space depending on the layout and utilization of the server room. Some companies may have excess space in their server room and may not be concerned with this, while others may be dealing with an overcrowded server room. Furthermore, savings in reduced rack or floor space are difficult to quantify because the value of a square foot of floor space in Manhattan is very different than in Omaha. For these reasons, floor space savings were not included in the financial calculations. It is worth noting, however, that all scenarios studied offer companies the ability to save rack and floor space.

The following table shows the height, expressed in rack units, for the five original OpenVMS environments:

**Rack Space Requirements**

Original Environment	Rack Units
AlphaServer ES80	16 U
AlphaServer ES47	8 U
AlphaServer GS1280	82 U
Five AlphaServer DS25	25 U
Ten Integrity rx3600	40 U

In all scenarios, the old environment is upgraded to a new Integrity i2 blade that would require one blade enclosure. The blade enclosure requires 10 rack units of space. This is far less than all but the AlphaServer ES47. It should be noted that in all scenarios the enclosure has room for between one and seven additional blades. This means the environments can easily be expanded in the future without requiring any additional rack space.

Note: The following sections include detailed analyses of five different scenarios. All analyses are based on US dollars. Companies located in other countries may have slightly different findings due to currency exchange rates and local pricing.



### Scenario #1: AlphaServer ES80 Upgrade Analysis

The first scenario involves upgrading a midrange AlphaServer ES80 to an Integrity BL860c i2 blade. The AlphaServer ES80 has a total of eight single-core processors while the Integrity BL860c i2 blade has two quad-core processors. The list price of this new blade with an enclosure is \$28,000. This price includes three years of 24x7 4-hour support on the hardware and operating system. Adding labor costs associated with installation brings the total acquisition price of the new Integrity BL860c i2 blade to \$33,000.

### Highlights

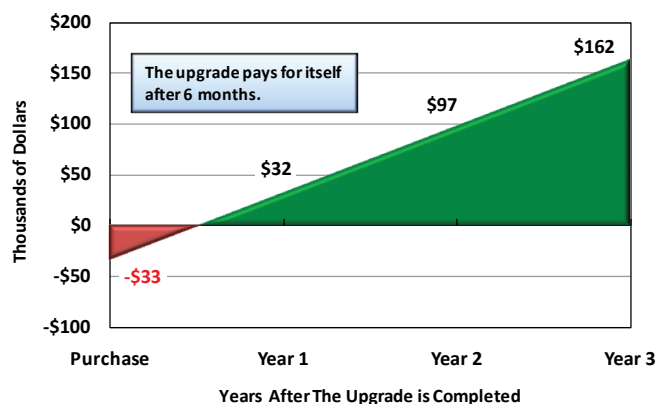
Upgrading an AlphaServer ES80 to an Integrity BL860c i2 blade pays for itself in just six months.

Over a three-year period, the cumulative savings in reduced support contract, management, downtime and energy costs is \$162,000.

This upgrade results in an 87% reduction in energy usage.

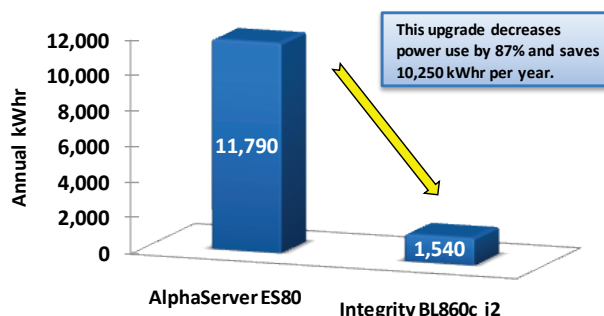
HP no longer sells the AlphaServer ES80. The annual price for hardware and software support for this server is \$37,000. After just one year the support contract savings will more than pay for the new blade. The new BL860c i2 is also easier to manage and offers greater availability. Every company has a different cost associated for each hour of downtime. An hourly downtime rate of \$10,000 was used in this scenario. Based on prior studies, this is a conservative number. The chart below shows the three-year cash flow analysis when all factors are considered including savings from reduced support contract, management, downtime, and energy costs.

**First Midrange Upgrade Cash Flow Analysis**  
AlphaServer ES80 to Integrity BL860c i2



The above chart shows that this upgrade pays for itself in just six months. After three years the cumulative savings is \$162,000. One component of these savings is energy costs. The following chart shows that this upgrade reduces energy usage 87% and saves over 10,000 kWhr a year.

**AlphaServer ES80 to Integrity BL860c i2**



### Scenario #2: AlphaServer ES47 Upgrade Analysis

The second scenario involves upgrading a midrange AlphaServer ES47 to an Integrity BL860c i2 blade. The AlphaServer ES47 has four single-core processors while the Integrity BL860c i2 blade is again configured with two quad-core processors. The new blade is identical to the one used in the first scenario. This means the list price with an enclosure is \$28,000 and the total acquisition price including three years of 24x7 4-hour support and installation labor costs is \$33,000.

#### Highlights

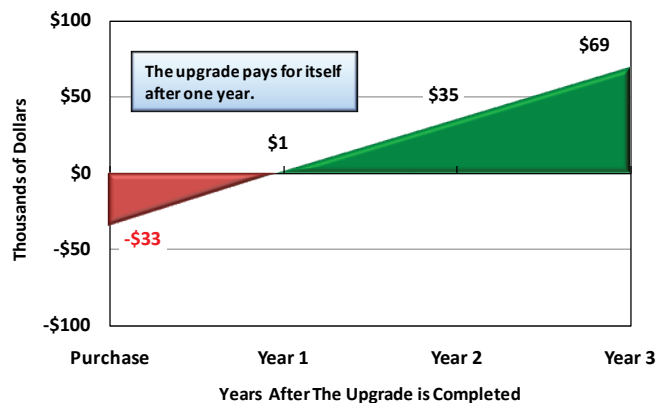
Upgrading an AlphaServer ES47 to an Integrity BL860c i2 blade pays for itself in one year.

Over a three-year period, the cumulative savings in reduced support contract, management, downtime and energy costs is \$69,000.

This upgrade results in a 54% reduction in energy usage.

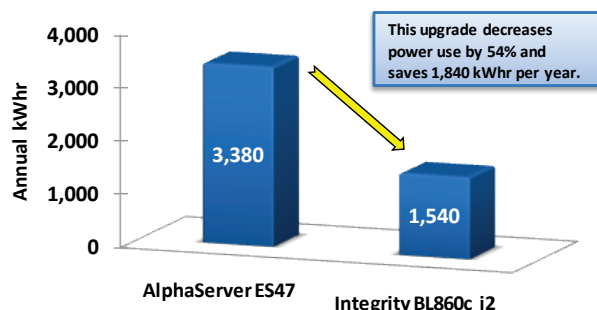
Like the AlphaServer ES80, HP no longer sells the AlphaServer ES47. The annual price for hardware and software support for this server is \$15,000. After one year the support contract savings will pay for almost half the cost of the new blade. Similar to the first scenario, a \$10,000 per hour rate for downtime costs was used. The chart below shows the three-year cash flow analysis when all factors are considered including savings from reduced support contract, management, downtime, and energy costs.

Second Midrange Upgrade Cash Flow Analysis  
AlphaServer ES47 to Integrity BL860c i2



The above chart shows that this upgrade pays for itself after one year. After three years the cumulative savings is \$69,000. The AlphaServer ES47 uses significantly less energy than the larger AlphaServer ES80. Despite this difference, this upgrade still results in reduced energy consumption. The following chart shows that this upgrade reduces energy usage 54% and saves almost 2,000 kWhr a year.

AlphaServer ES47 to Integrity BL860c i2



## Scenario #3: AlphaServer GS1280 Upgrade Analysis

In this scenario an enterprise-class AlphaServer GS1280 with 32 processors is upgraded to one Integrity BL890c i2 blade configured with eight quad-core processors. The list price of this high-end blade with an enclosure is \$154,000. This price includes three years of 24x7 4-hour support on the hardware and operating system. Adding installation costs brings the total acquisition price to \$159,000. Reminder: All scenarios assume the OpenVMS licenses are transferred from the old server to the new blade.

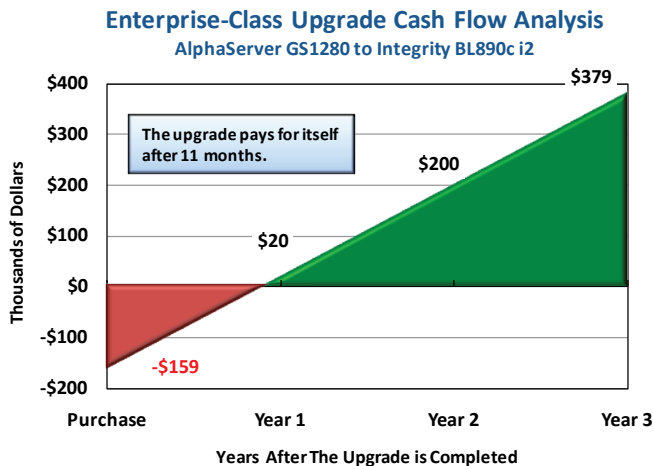
### Highlights

Upgrading an AlphaServer GS1280 to an Integrity BL890c i2 blade pays for itself in just eleven months.

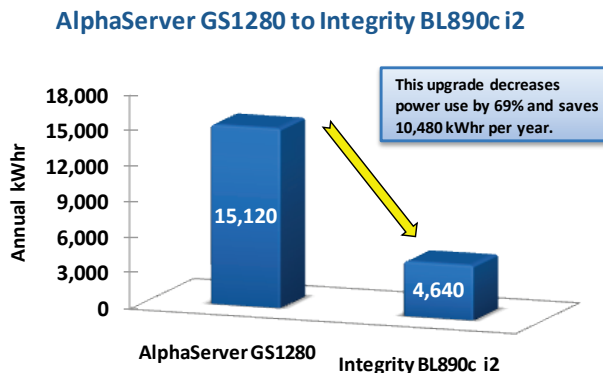
Over a three-year period, the cumulative savings in reduced support contract, management, downtime and energy costs is \$379,000.

This upgrade results in a 69% reduction in energy usage.

A support contract from HP that covers the AlphaServer GS1280 hardware and software costs \$111,000 per year. This is roughly six times the annual cost of the service contract on a new BL890c i2 blade. After one year the support contract savings alone will cover more than half the price of the new blade. For this enterprise-class environment, an hourly downtime rate of \$50,000 was used in the analysis. The chart below shows the three-year cash flow analysis when all factors are considered including savings from reduced support contract, management, downtime, and energy costs.



The above chart shows that this enterprise-class upgrade pays for itself in just eleven months. The \$379,000 cumulative savings over three years would pay for two additional BL890c i2 blades. In terms of energy, the AlphaServer GS1280 uses over 15,000 kWhr a year. This upgrade reduces energy usage 69% and saves over 10,000 kWhr a year.



### Scenario #4: AlphaServer DS25 Consolidation Analysis

HP's Virtual Machine software makes it possible to consolidate multiple servers onto a single system. In this scenario five entry-level AlphaServer DS25 servers are consolidated onto a single Integrity BL870c i2 blade. The five AlphaServer systems have a total of ten processors while the BL870c i2 has four quad-core processors. The list price of this new blade with an enclosure is \$66,000 including three years of 24x7 4-hour support on the hardware and operating system. The total acquisition price of the new Integrity BL870c i2 blade including installation is \$71,000.

#### Highlights

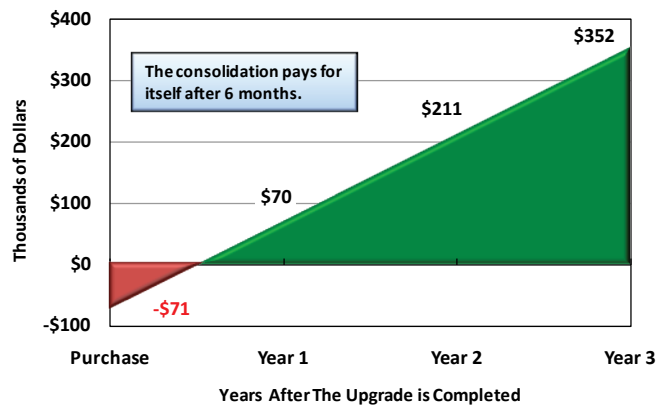
Consolidating five AlphaServer DS25 servers into one Integrity BL870c i2 pays for itself in just six months.

Over three years this consolidation results in cumulative savings of \$352,000 in reduced support contract, management, downtime and energy costs.

This consolidation results in a 51% reduction in energy usage.

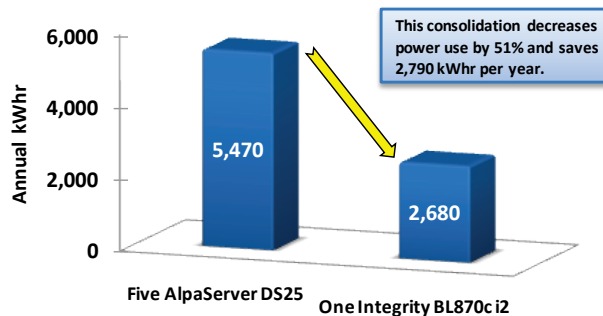
The annual price for hardware and software support for five AlphaServer DS25 servers is \$65,000. Management cost savings are magnified in consolidations because system managers have to maintain fewer servers. An hourly downtime rate of \$25,000 was used in this scenario.

Entry-Level Consolidation Cash Flow Analysis  
Five AlphaServer DS25 to One Integrity BL870c i2



The above chart shows that this consolidation pays for itself in just six months. After three years the cumulative savings is \$352,000. This consolidation is also "energy-friendly" as it results in a 51% reduction in energy usage and annual savings of nearly 2,800 kWhr.

Five AlphaServer DS25 to One Integrity BL870c i2



## Scenario #5: Integrity rx3600 Consolidation Analysis

In the final scenario, ten Integrity rx3600 servers are consolidated onto a single Integrity BL870c i2 blade using HP Virtual Machine. These Integrity servers are older models based on the Montecito chip and are out of their original warranty. The ten Integrity rx3600 servers have a total of twenty two-core processors while the BL870c i2 is configured the same as in the previous scenario. As a result, this new blade with four quad-core processors has a total acquisition price including installation of \$71,000. The price includes three years of 24x7 4-hour support on the hardware and operating system.

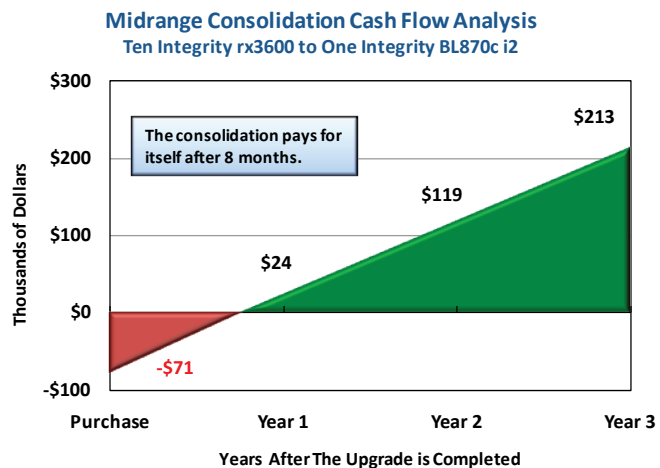
### Highlights

**Consolidating ten older Integrity rx3600 servers onto a single Integrity BL870c i2 blade pays for itself in eight months.**

**Over a three-year period, the cumulative savings in reduced support contract, management, downtime and energy costs is \$213,000.**

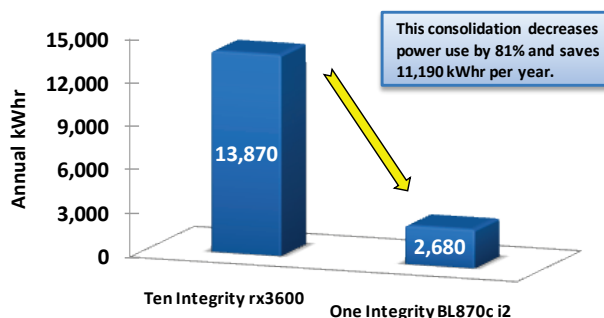
**This consolidation results in an 81% reduction in energy usage.**

The annual price for out-of-warranty hardware and software support for ten Integrity rx3600 servers is \$51,000. In addition to these support cost savings, consolidating ten servers into one will greatly reduce IT overhead and management costs. As in the previous consolidation scenario, an hourly downtime rate of \$25,000 was used for this analysis. When all factors are considered including savings from reduced support contract, management, downtime, and energy costs, this consolidation will result in annual savings of about \$95,000. This consolidation pays for itself in just 8 months and results in cumulative savings of \$213,000 over three years.



This consolidation reduces energy usage 81% and saves 11,000 kWhr per year.

### Ten Integrity rx3600 to One Integrity BL870c i2



## Extra Incentives for Oracle Users

Every software company has a different pricing policy for their support contracts. Previous TechWise studies showed that sixty percent or more of OpenVMS AlphaServer systems are running Oracle Server or Oracle Rdb. For this reason, TechWise analyzed the impact of the upgrade and consolidation scenarios on Oracle support costs. Oracle's June 14, 2010 Global Price List, which is posted on its website, was used for the analysis. Note the prices listed in Oracle's document are for educational purposes only and are subject to change at any time. The current price for an annual support contract for Oracle Enterprise Edition is \$10,450 per processor. The new Integrity i2 blades all use quad-core chips. For the purposes of license fees, Oracle treats each quad-core chip as two processors instead of four. Because of this, some upgrades can potentially result in a reduction in Oracle's annual support costs.

How much can companies save in Oracle support costs? The answer varies by scenario. There are no potential savings in Oracle support costs with the AlphaServer ES47 upgrade scenario. The AlphaServer GS1280 upgrade, on the other hand, would reduce the number of licenses by 16. This translates into significant, ongoing additional savings for companies that run Oracle Enterprise Edition. The table below summarizes the additional potential savings for each of the five scenarios.

Impact of Oracle Support Contract

Scenario (# of cores)	Change in Oracle Licenses	Annual Savings in Support Costs	Break-Even with Oracle Savings
AlphaServer ES80 (8) to BL860c i2 (8)	- 4	\$41,800	4 months
AlphaServer ES47 (4) to BL860c i2 (8)	No change	\$0	1 year
AlphaServer GS1280 (32) to BL890c i2 (32)	- 16	\$167,200	6 months
5 AlphaServer DS25 (10) to BL870c i2 (16)	- 2	\$20,900	5 months
Ten Integrity rx3600 (40) to BL870c i2 (16)	- 12	\$125,400	4 months

Several assumptions went into the above calculations. First, TechWise applied Oracle's list price for service contracts. Some companies will receive discounts on these service costs. Second, TechWise assumed that the excess licenses that result from the upgrade will not be redeployed elsewhere in the company. Third, the calculations were based on the June 15, 2010 policy posted on Oracle's website regarding their technical support policies. This policy states that "In the event that a subset of licenses on a single order is terminated or if the level of support is reduced, support for the remaining licenses on that license order will be priced at Oracle's list price for support in effect at the time of termination or reduction minus the applicable standard discount..." The full text of this policy may be viewed on Oracle's web site at the following URL:

<http://www.oracle.com/us/support/library/057419.pdf>

## Highlights

In four out of five scenarios, Oracle users can reduce the cost of their annual Oracle support contract.

The additional annual savings range from \$20,900 to \$167,200.

These savings make the upgrades and consolidations more attractive financially.

### Conclusion

This study focused on quantifying the costs and benefits associated with upgrading OpenVMS environments to HP's new Integrity i2 server blades running OpenVMS V8.4. Detailed cash flow analyses were performed on five different scenarios. Three scenarios involved one-for-one upgrades of AlphaServer systems while the other two involved consolidating multiple AlphaServer or out-of-warranty Integrity servers to a new blade. Due to improved price/performance ratios offered by the HP BL860c i2, BL870c i2, and BL890c i2, the acquisition cost for the new blades is typically a fraction of the purchase price of the older systems being replaced. Several factors were included in the TCU analyses including: the list price of the new Integrity i2 blades and the costs associated with HP service contracts, management, downtime, energy and potential savings in Oracle support costs.



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Operational data for this study came from previous TechWise Research surveys of companies running HP AlphaServer and/or HP Integrity servers in a production environment. System and service contract prices were obtained from IDEAS International. The Integrity i2 blades are too new for customers to have deployed them in a production environment for any significant length of time. For this reason, TechWise assumed that the new blades would have the same management and downtime costs as other Integrity servers.

All five scenarios pay for themselves in one year or less. After three years the upgrades result in cumulative savings ranging from \$69,000 to \$379,000. Each company's OpenVMS environment is unique. These savings could be higher or lower depending on many factors. Companies that run OpenVMS on AlphaServers or out-of-warranty Integrity servers should consider upgrading their systems to OpenVMS V8.4 running on Integrity i2 blades.

TechWise Research is an independent primary market research firm. Since being founded in 1998, TechWise has conducted hundreds of market research studies in the computer industry.

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