

RADICAL CENTS

“Common sense is not so common.”

-- Francois Marie Arouet (Voltaire)
From Dictionnaire Philosophique, 1764

The Standish Group estimates that over one trillion dollars per year is spent on information technology. The VirtualADVISOR® System is designed to improve the efficiency and value of this IT spending, while increasing the delivery speed of critical applications. The VirtualADVISOR® System is a collection of wisdom-based management tools to help IT managers increase their understanding of their business and IT environment by providing case-based, and, ultimately, enterprise-wide alternative solutions. It can easily be used to aid in reducing risk and cost while increasing value and efficiency.

As of this writing, the Standish Group's VirtualADVISOR Cost Assessment

Model's database has over 2,000 cases, while the Risk Assessment Model's database has over 30,000 cases. These cases give us a view into the cost and risk of enterprise applications that we have previously been unable to see. Consider the following: MIT professor Erik Brynjolfsson claims that a one dollar investment in IT will return a six-fold ben-

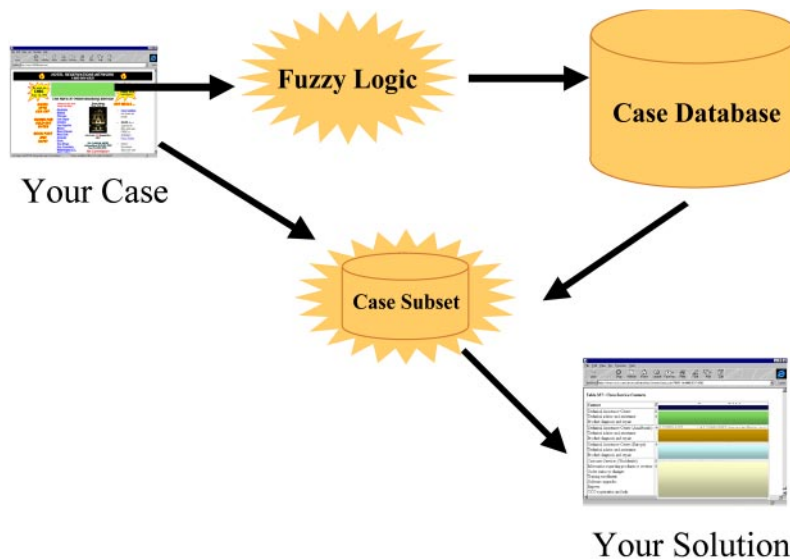
efit to the business if successful. In this research paper we are going to look at four IT migration cases from an investment standpoint.

Three of these cases involve an attempt to convert from Compaq's Himalaya to another platform. The fourth case is from a company that did not attempt a conversion off the platform, but rather chose to upgrade their applications and processing infrastructure. All have been slightly altered to camouflage their identify.

Case one is a hotel and casino reservation and gaming system. The conversion was from the Compaq Himalaya to a Wintel platform. All Microsoft products were used, including SQL

Server, MTS and Visual Basic. The company justified the conversion on cost savings, the ability to attract and maintain qualified technical personnel, and the fact that Himalaya was not a strategic platform. The system averages two transactions per second at peak and runs at peak 2,500 hours per year. The yearly cost of the basic operation using

The VirtualADVISOR System

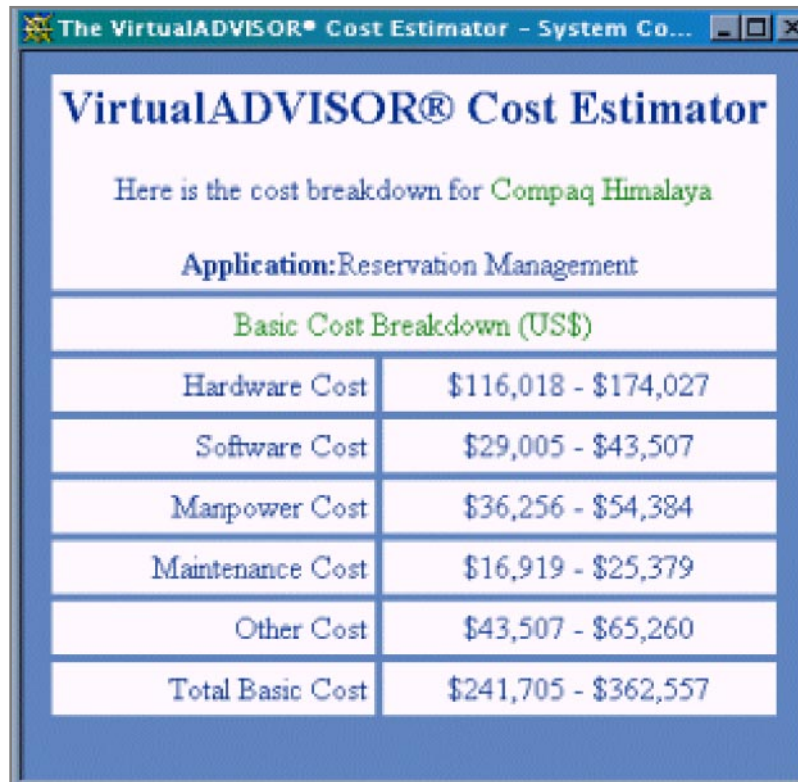


Himalaya is between \$241,705 and \$362,557, while the cost to operate the Wintel non-cluster platform is between \$71,722 and \$107,582. Using the basic model as a guideline, it will take the firm at least 24 years to get back their \$6 million investment in converting from Himalaya to the Wintel platform. Adding in the application costs, the total year's expense to operate the application is between \$487,000 and \$730,000 for the Himalaya, and \$343,000 and \$514,000 for the Wintel platform. Again, it would have taken the company least 28 years to return the \$6 million. If the cost of downtime is added, the investment goes negative to a tune of approximately \$1 million per year.

The VirtualADVISOR Risk Assessment Model suggested that the chances of a successful outcome were only 16%, 30% for a challenged resolution and 54% for a failed resolution. This company did not beat the odds, and the conversion was canceled after \$6 million worth of investments. Using Erik Brynjolfsson's formula, an investment in a successful project could have returned \$36 million to the business in total savings.

Case two is an electronic manufacturer's Internet order processing application. The migration from Himalaya was to be to Wintel running Oracle and their own homegrown middleware. The first investment was \$10 million, and the second investment was \$17 million. The company justified the conversion on cost savings, the ability to attract and maintain qualified technical personnel, the fact that it was easier to add applications, and that Compaq was not a political favorite. The system averages ten transactions per second at peak and runs at peak 2,980 hours per year. The yearly cost of the basic operation using Himalaya is between \$2.6 million and \$3.8 million, while the cost to op-

erate the Wintel non-cluster platform is between \$1 million to \$1.6 million. Using the basic model to estimate cost, it would have taken the firm 4 to 8 years to get back their \$10 million dollar investment for the Wintel conversion, almost double for the \$17 million restart. Adding in the application costs, the total year's expense to operate the application is between \$5 million and \$7.6 million for the Himalaya, and \$5.8 million and \$8.6 million for the Wintel platform. Here, the application cost went negative. Adding in the cost of downtime drags the negative savings from \$7 million to \$12 million per year.



Basic Cost Breakdown (US\$)	
Hardware Cost	\$116,018 - \$174,027
Software Cost	\$29,005 - \$43,507
Manpower Cost	\$36,256 - \$54,384
Maintenance Cost	\$16,919 - \$25,379
Other Cost	\$43,507 - \$65,260
Total Basic Cost	\$241,705 - \$362,557

The VirtualADVISOR Risk Assessment Model suggests the company had a 32% chance for a successful outcome, while a challenged resolution was 33% and a failed resolution was 35%. This company did not beat the odds either and their project was canceled after investing \$27 million. An investment in a successful project could have returned \$162 million in savings to the business.

Case three is a major telecommunication service order processing application. The migration from Himalaya was to be to Sun Solaris running Oracle and their BEA's Tuxedo. The first investment was \$3 million, the second was \$7 million and the third was \$12 million. The company justified the conversion on cost savings, the ability to more easily attract and maintain qualified technical personnel, the belief that it was easier to add applications, and that Sun and Oracle were the company's standard platforms. The system averages ten transactions per second at peak and runs at peak 3,250 hours per year. The yearly cost of the basic operation using Himalaya is between \$1.9 million and \$2.9 million while the cost to operate on the Sun Solaris platform is between \$800,000 to \$1.2 million. Using the basic cost assessment model it would have taken

the firm 2 to 3 years to get back their \$3 million investment in the Sun/Oracle conversion effort, over twice the time for the \$7 million restart and up to 12 years for the third time around. Adding in the application costs, the total year's expense to operate the application is between \$3.8 million and \$5.7 million for the Himalaya, and \$7.5 million and \$11 million for the Sun Solaris platform. Here again, the application investment went negative. Adding in downtime drags the negative savings from \$6 million to \$9 million per year.

The VirtualADVISOR Risk Assessment Model

(RAM) suggested the company had a 34% chance of a successful outcome. The company's chance for a challenged resolution was 36% and for failure, 30%. While the VirtualADVISOR favored a challenged project, the conversion project failed and the project was canceled after three attempts and a \$22 million investment. An investment in a successful project could have returned a savings of \$132 million.

The fourth case is one that the company did not try to migrate off the Compaq Himalaya. However they too, just like the hotel, electronic manufacturer, and the telephone company, were concerned about cost, availability of talent and being in the main stream of technology. This company is a major player in the discount stock brokerage business. The securities firm had three major challenges to address: (1) after smoke filled their computer room one night, contingency planning and disaster recovery became an obvious priority, (2) like other shops running older applications (theirs is from a third-party solutions provider), finding talent for the old technology and doing their own development using a proprietary database and programming languages was becoming more and more difficult, and (3) while they have added a web interface to their application, improv-

ing real-time access to the data (using more modern tools/technologies) was also a priority.

In the first phase of the project, the company produced a proof of concept. The securities firm first attacked the issue of disaster recovery of their computer systems environment. Their third-party application was not coded to use the standard TMF transaction recovery/2-phase commit technology on the Himalaya platform, hence they had been limited to taking nightly backups of their critical data. In the event of a true disaster, they would have been forced to restore the backups from the night before,

losing up to a day's worth of processing. Using some new technology from Compaq, the securities firm was able to enable protection of their data, without having to modify any of their programs and those from their third-party vendor. Once this was done, all changes to their databases could be replicated using the Compaq Remote Database Facility (RDF). Now, when a transaction is executed on the primary installation, any changes to the database are automatically replicated to the remote

system by RDF. In case of a disaster at the company's primary site, the securities firm has demonstrated less than seven minutes to take over processing by the remote site. That's just the beginning. They plan to use the remote site to do business intelligence functions, thereby getting additional value from their disaster recovery site. In addition, using some new features soon to be released by Compaq for RDF called "Super-Fast Takeover," they plan to be able to reduce disaster switch-over time to less than 20 seconds! This proof of concept, which later turned into part of the production system, took about 60 man-days to accomplish.

The next phase of the project was to convert their core database files to NonStop SQL/MP. This was

The screenshot shows a window titled "The VirtualADVISOR® Cost Estimator - System Co...". The main content area displays the following information:

VirtualADVISOR® Cost Estimator

Here is the cost breakdown for **Wintel Non-Cluster**

Application: Reservation Management

Basic Cost Breakdown (US\$)

Hardware Cost	\$12,910 - \$19,365
Software Cost	\$717 - \$1,076
Manpower Cost	\$42,316 - \$63,474
Maintenance Cost	\$2,152 - \$3,227
Other Cost	\$12,910 - \$19,365
Total Basic Cost	\$71,722 - \$107,582

done by using Carr Scott Software's Escort SQL software. Escort SQL, replaced Enscribe calls with the corresponding NonStop SQL statements, dynamically, without needing to change the existing programs. This database upgrade process was done over a 90-day period with three people.

After the Enscribe files were replaced by SQL tables, the Securities firm set up a real-time integration backbone based on IBM's MQ series. This allowed transactions to flow to and from other applications and systems, including the securities firm's web site which runs on Sun servers with BEA's WebLogic using Oracle databases. Now that their database is in industry standard SQL format, new development can be done in Java, XML, CGI or any of the other industry standard "languages" that Compaq has developed, eliminating the proprietary nature of Himalaya access and opening the pool of talent that can work on the systems.

The total cost of labor for the securities firm projects outlined above was approximately \$1 million. While not an insignificant sum, it would have cost many millions to convert off the Compaq Himalaya and might have ended in disaster like the other three.

At first glance, you might think converting from the Compaq Himalaya is hard. While this might be true, the applications themselves are pretty standard. Why could the original applications be built and operated while the new efforts failed? The securities firm took the approach that each im-

provement they made, should be taking them a step closer to all their goals. Implementing a real-time disaster recovery site provided them with a place to off-load new high-speed queries to the database. Upgrading from Enscribe to NonStop SQL made data access much easier from industry standard tools and programming languages, but NonStop SQL also allows file maintenance to be done online, eliminating future downtimes and furthering database growth and accessibility. Having the database in SQL means that new development can be done using modern tools. Is it that the Himalaya has so many built-in features that duplicating them on a merchant platform increases the cost and effort, thereby making it so much more difficult? Is it actually easier to develop and deploy on the Himalaya than a standard merchant platform? Consider that in all three failure cases adding downtime makes the Himalaya cheaper to operate. In two of the three failure cases, the application costs drive the merchant platforms to cost more. In all three of the failures cases the investment to migrate off the Himalaya was poorly justified and the risk was poorly understood. Consider also that the original Himalaya applications are still running in the businesses. These cases clearly show that more time is needed to go into the IT investment portfolio before efforts this size are undertaken.

Comparative Economic Normalization Technology Study (CENTS) is the follow-up to the original TCO study and is the basic input into the VirtualADVISOR Cost Assessment Model.



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