

The HP Financial Advisor

HP innovation for the financial sector





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HP is a leading provider of infrastructure products, solutions and services for the financial services industry (FSI). We focus on three key markets—banking, capital markets and insurance—with a significant worldwide presence in all of the largest banks, brokerage firms, and insurance carriers, and every major stock and commodities exchange.

Drew Caola, VP of Sales and General Manager, Financial Services Industry Strategic Accounts, is responsible for HP's strategic accounts in financial services. Drew has been with HP since 1984, in a variety of services and sales management positions. Before joining HP, he worked for Arthur Andersen & Company.

Dear Reader,

We've certainly witnessed some interesting events recently. Congressional rescue plans and market volatility are adding to the unrest in our country.

On top of all the upheaval, chief information officers (CIOs) at financial services firms still need to focus on improving return on investment (ROI), mitigating risk, improving performance, increasing agility, and facilitating regulatory compliance—all of which will involve the effective use of information technology.

Many financial services companies are undergoing significant shifts in revenue sources, particularly in the capital markets and consumer banking areas. They need the right information to better understand the needs of customers and markets so they can cross-sell products and services. And of course everyone is trying to figure out how to drive higher quality and greater profits by more effectively automating processes.

HP is a leading provider of infrastructure products, solutions and services for the financial services industry (FSI). We focus on three key markets—banking, capital markets and insurance—with a significant worldwide presence in all of the largest banks, brokerage firms, and insurance carriers, and every major stock and commodities exchange. Our job as a technology and services provider is to help companies reduce costs, mitigate risk, increase efficiency, and deliver greater customer value.

The reason so many FSI customers rely on HP is because we're so focused on applying our technology expertise to your business problems. We're helping CIOs solve key business challenges by leveraging the wide breadth of our products and services in combination with our valued channel partners. In this premier edition of the HP Financial Advisor, we're pleased to present our efforts at helping you explore technology and services options for your company. Here's a brief sampling of what you'll find inside:

When EDS speaks...

Over the past year, HP has made a number of acquisitions, in both our business technology and business information areas, EDS being the most recent example. On page 4, you can read our interview with Mark DeBenedictus, EDS's Vice President for the financial sector. Mark has plenty to say about how EDS is helping customers address business challenges, and he also shares his thoughts on future market trends and how technology will help both address the current financial crisis and prevent its recurrence.



HP is helping companies with data center transformation and virtualization. Learn how we've joined forces with a number of ISV partners to help our customers virtualize solutions and modernize applications, to help achieve a more robust and efficient enterprise.

Greening the data center

If you've been in contact with HP recently, then you've probably heard about our own data center transformation. It was a huge undertaking, and a very successful one, I might add. We've learned a lot, and now we're using those lessons to help companies of all sizes achieve the benefits of transformation, including how to use green technologies to achieve major cooling and energy cost savings and rapid ROI. You can read about it in our [Greening the Data Center](#) section.

Transformative reading

You'll also find out how HP is helping companies with data center transformation and virtualization, in articles such as [How Virtualized are You?](#) and [The Storage Virtualization Story](#). Learn how we've joined forces with a number of ISV partners to help our customers virtualize solutions and modernize applications, to help achieve a more robust and efficient enterprise. Of course part of transformation is making sure your data center is secure and compliant, so don't miss [HP Helps Financial Institutions Defend Against Web Attacks With New Application Security Offerings](#), and [Musings on Web App Security](#).

Intelligence you can use

Business intelligence (BI) is another topic of significant interest for our customers, and it's easy to see why: BI can help companies master the increasingly vast amounts of available information and grow their businesses by mining the information for useful intelligence. That's what business intelligence is all about—turning raw data into useful information. Companies that succeed in the BI arena become more competitive, increase revenues, and understand customers better. Read about it here, in articles such as [Data](#), [Data Everywhere](#) and [The Future of EDW](#).

You'll also find plenty of interesting reading for individuals in banking, capitol markets or insurance, along with specialty topics like radio frequency identification (RFID) and how it will impact the financial services sector. There's something for everyone, and if your company relies on information technology, you're sure to discover some interesting nuggets.

I'd like to thank you for your interest in [The Financial Advisor](#). I hope you find it interesting and relevant, and I invite you to contact me or your HP sales representative with any questions or comments you might have.

Best regards,

Drew



A conversation with Mark DeBenedictus from EDS an HP company

Mark DeBenedictus knows his way around information technology for the financial services industry. In his current role as Vice President of U.S. Financial Services for EDS, he's responsible for driving growth across banking, insurance, and capital markets, overseeing strategy and go-to-market plans in Canada, Mexico, and the U.S.

In his 25 years with EDS, Mark has spent 17 years working in the financial and insurance services industries. He has led all lines of business and delivery components: credit processing BPOs, large transformation and application projects, account management and new business development, and, most recently, delivery of all existing accounts in Australia and New Zealand focused on financial services, across all lines of business and industries.

The HP Financial Advisor (HPFA) caught up with Mark recently to find out how EDS is helping the financial services industry face current and future challenges, how the company is using SOA to enable powerful new capabilities, and to learn about the role of technology in preventing future sub-prime mortgage crises.

HPFA: Why don't we start out with a high-level overview of EDS's business?

MD: Sure, let me just throw out a few numbers to give you an idea of the scale of what we're doing. EDS supports 200-

plus financial services clients, including nine of the top-ten global financial services firms. We originate more than one million loans for more than 20 financial services companies. We handle 45 million credit card accounts and 1.3 billion credit card transactions in 18 countries, and we service more than 2 million consumer loans. We're one of the top three processors of outsourced mortgage loans, servicing more than 2 million existing loans and originating more than 500,000 new loans. We provide services and systems for more than 10 million insurance policies. Every year, EDS processes 1.5 billion checks and 100 million remittance transactions and 83 million ACH transactions. To put all this in perspective, EDS touches one-in-five households in the U.S. through our network of services.

HPFA: How is EDS helping its customers in the U.S. address their business challenges?

MD: There are three key ways that we're helping our clients succeed in today's market. One: by reducing cost, which we do by bringing to bear best-in-class services and leveraging our investments. We can usually find a 20 percent cost efficiency in key offerings. Two: by increasing quality; our capabilities can drive outage reductions and provide end-to-end stability. This allows our clients to eliminate idle time and service

their customers in this "always on" environment. And three: by simplifying their environments. We have capabilities that enable companies to unlock their legacy environments, creating "speed-to-market." We've seen where we can reduce test and development time in half by introducing major changes in these environments.

HPFA: What types of solutions is EDS offering within your primary segments—banking, capital markets, insurance, and professional services?

MD: There are three areas of focus that we provide in these segments. We deliver network services solutions that help clients transition and consolidate dispute networks, and move to a digital backbone. We provide a host of specific application development and testing services that require domain expertise; for example, we're currently developing a state-of-the-art portal for a client that we believe is game-changing in the insurance industry. And, finally, we're focusing on bringing our Financial Services Industry Service Oriented Architecture to lethargic environments that exist in this market.

HPFA: Does EDS offer any line-of-business applications for things like credit fraud detection?

MD: Good question. We actually do—in two different dimensions—through our alliance embedded in our services, and

EDS supports 200-plus financial services clients, including nine of the top-ten global financial services firms.



in specific market niches where we believe we have a competitive advantage. For example, in commercial and life insurance with our EDS SOLCORP entity.

HPFA: What are some of the major trends impacting financial services in the near-to-medium term?

MD: This year, 2008, the first of 78 million baby boomers are turning 62, and the number of people age-60 and over will increase by 55 percent over the next 20 years. The major issue our clients will face is that this population will want open access to security and planning tools. Reliable networks that can deliver data and capabilities on demand will be key. All of this plays well to EDS's strengths given that innovation in these types of products and processes mean more multi-sourcing and integration, and that's where we come in.

HPFA: There's been some very grim economic news these past few weeks—how is EDS addressing some of the trends around that?

MD: Well, the credit crisis will certainly create significant market dynamics through 2008 and 2009, and there will also be significant opportunities for firms

like ours. Our deep process and technical knowledge of securitization, trust reporting, and regulatory requirements puts us in a unique position. Guarding against fraud will take more data storage, more real-time analysis, and new checks and balances. We can do all of these things and thus add a lot of value to this market for investors and financial institutions.

HPFA: Looking at last year's sub-prime mortgage meltdown, do you see technology playing a role in preventing that from happening again?

MD: Yes, I do. One way technology can help is by providing the capacity to access data that wasn't there before. The thoroughness and the robustness of the data you're going to have to capture will require more storage and more infrastructure to cool that storage. Another way has to do with parsing the data in totally different ways. That's the only way investors can get the information they need to make appropriate decisions based on an accurate view of the overall risk involved. So technology firms will need to bring faster storage capabilities into play, along with better applications to process the data and

provide reliable information to investors.

HPFA: So you think one of the problems was that some of the information just simply wasn't there?

MD: Yes, absolutely. If you think about what caused the problem, it's similar to the reinsurance loop: the process got so complicated that people were offering risk and no data to support it. It became a blind acquisition of risk. Because that information wasn't there, they took tranches—parts of the interest rate—and sold them, and it became so far removed from the actual asset, there was no way to see what kind of risk was involved. Eventually, after about twenty different companies portioned that out and the financial instrument got back to the pension funds, there was a lot more risk in them than was being communicated. So let's say, if there were data available that said that property A, which is part of security B, is located in Michigan, and the auto industry is having problems, then there's an additional level of risk that's going to come into play. Then you would know that real risk you held and possibly all others who share that risk with you in some way. If investors would have had access to that

level of information, they probably would have had a different point of view for that investment.

HPFA: Do you anticipate that if the capability you described is perfected, it'll successfully evaluate risk by taking those outside-the-industry factors into play?

MD: Yes, when investors want to buy a CDO—collateralized debt obligation—they'll know in great detail what they're buying. So what will happen when someone tries to sell a CDO that's based on extremely risky sub-prime mortgages is that no one will buy them. Because right now, what's happened is that nobody can buy anything, so you see Fannie and Freddie as 70 to 80 percent of the mortgage business out there today, where they were only purchasing 40 to 50 percent prior to this meltdown. No one will buy even the good stuff because no one knows how to decipher it anymore. If you want to start charging higher interest rates, people are going to want to get back in the market, but only if they can get visibility. And that's where technology providers and enablers like us will play a big role.

HP: The CEO's view of IT

Mark Hurd's Advice — IT Is An Investment

By Laurie M. Orlov, Forrester Group with Merv Adrian and Bo Belanger



In a recent keynote address to industry analysts, Mark Hurd, CEO of Hewlett Packard, surprisingly focused a sub-

stantial portion of his remarks on the efforts underway at HP to transform each of the dimensions of HP's IT: what technology the firm uses, how technology is used across the firm, and the management of the IT organization. He believes that HP wants much of the same from its own IT that its customers want from their IT, which includes driving maintenance as a percentage of IT spend from 70% to 20%, halving IT cost, providing instant access to information across the corporation, lowering risk, and producing a measurable suite of products along the way. Although the HP IT transformation is a work in progress, every firm can benefit from Mark's advice.

Although CEOs and CIOs aren't always on the same page in terms of communication and expectations of IT, some CEOs see the potential quite clearly. HP CEO Mark Hurd, speaking at the HP Technology Services Group Industry Analyst Summit in Boston, provided a context for why it is so important to streamline, simplify, and absorb the growth at HP through smarter IT:

- Business scale and growth—and therefore opportunity—are staggering. HP's CEO outlined a few of the basic facts about HP's business today that help place what the CIO is doing into context: He noted that the firm approaches \$100 billion in revenue; is doing business in 179 countries; is

contacted 800 million times per year for support, service, or help; and has 160,000 people facing customers. He translated that scale into units: "We ship three printers every second, two PCs every second, and one server every 11 seconds." So tiny changes have huge impacts. Half a percent improvement can equate to hundreds of millions of dollars.

- IT complexity mirrored business complexity. Mark was blunt about his reaction to IT when he arrived at HP: "We were spending substantially more than the industry average IT cost per employee and growing IT spend at between 5% to 6% per year, with the maintenance/operations percent of total spend in the range of 70%." And where was the spending going? "We had 85+ data centers in 29 countries, between 3,500 and 5,000 applications, 21,700 servers, and 762 data marts—stuff everywhere." He joked that when someone entered a query, it triggered the world's largest telecom bill.
- "The world doesn't stop for IT to catch up." Mark noted that the firm processes 50 million line item orders per year and generated \$12 billion of growth in the last two years. Despite the substantial IT spend and its 5% to 6% growth, the firm was underspending in capital. So for him, the question was how to streamline, simplify, and absorb the growth. He believed the firm had to spend money to save money and capital spending had to go up. "I would recommend this to any CEO—you have to have the courage to go to the investment base and tell them 'I am going to raise CapEx (capital expenditure) with a strategic objective to lower sustained operating expense over time.'"

Mark's Advice To CEOs—Deceptively Simple

Mark firmly denied that HP is an example of a turnaround—instead, he believes that it is a transformation story and still a work in progress. His actions and advice:

- Hire the right CIO. Shortly after his arrival at HP, he hired former Dell CIO Randy Mott to run HP's global IT organization. He was quick to point out that Randy previously had spent 22 years at Wal-Mart where he developed a reputation for efficiency and was particularly noted for helping with Wal-Mart's supply chain automation. Said Mark: "Most CEOs struggle to trust the CIO. Their firms have figured out how to work around system processes—but you must have a CIO whom you trust to stay the course with the process changes you need."
- Set straightforward business objectives for IT. Mark stated that he gave Randy a "simple" set of objectives when he came onboard: "1) Lower the cost of IT significantly and materially and have it show up on my P&L; 2) I need better information, so integrate across the service, supply, and customer part of our organization—we can't have 700 slices of data; 3) I can't have HP break while you do this; and 4) do it all with HP technology and technology from our partners." In addition, Randy has a scorecard that measures conversion of IT initiatives into products for HP services that yield revenue.
- Spend money to save money. Mark's IT transformation, planned and driven by Randy, was mapped over a three-year period, showing how capital spending would go up—and then down. As he noted, "We had to build the data centers before closing any [and] create application hubs before

shutting down applications—the hubs determined which data centers closed down first." He noted: "We are just at the crest of our CapEx beginning to decline."



Reduce Costs

Greening the Data Center

Environmental focus is good for business

HP adding business value by helping to preserve the environment

By Patsy Koetting

Whether you call it environmental responsibility, corporate citizenship or “going green”—as much of the media have coined it—one thing is clear: More and more IT companies are joining the movement. In today’s highly competitive marketplace, more and more enterprises are realizing the financial benefits of reducing energy use, a large and growing expense. Companies are looking at energy efficient IT products and solutions as a way to reduce costs and their environmental impact. In fact, CEO Mark Hurd recently declared, “Environmental responsibility is good business. We’ve reached the tipping point where the price and performance of IT are no longer compromised by being green, but are now enhanced by it.”

Indeed, HP’s achievement in the environmental space is not going unnoticed.

In a recent Manufacturing Business Technology article titled, “HP proves being green makes good business sense,” Contributing Editor Cole Ollinger summarizes HP’s leading environmental positions, noting the company’s desire to not only gain stature among the world’s greenest companies, but also to cut energy consumption by 20 percent while expanding its industry-leading product reuse and recycling programs.

“HP sees its green efforts not just as fodder for the annual report, but as critical to various parts of its diverse business, including hardware and IT services,” Ollinger writes. “From product and packaging design, to manufacturing and the supply chain, to reuse and recycling programs and marketing, HP uses green initiatives to cut costs and gain market share.”

Data center electricity usage in the U.S. has more than doubled since 2000—now accounting for more electricity per year than all the television sets in the country combined. What’s frightening for many companies is that in the near future it will cost more to power and cool a server over its lifetime than it will cost to buy the server itself.

One result of these ultra-intensive power consumption levels will be lower profits for the companies and further depletion of natural resources. In fact, HP scientists estimate business technology consumes more than 400 million tons of coal and produces 864 million tons of CO₂ greenhouse emissions each year. To counter this, HP has developed ways to use less power to both preserve resources and save money—for itself and its customers. As a result, HP has introduced a suite of products and services to reduce energy use from the desktop to the data center.

One example is HP Dynamic Smart Cooling (DSC) technology, which enables customers to change their data center energy costs from a fixed to a variable cost. This results in significant increases in IT scaling headroom and more efficient data centers. DSC allows companies to:

- Reduce cooling costs by 24-40 percent;
- Ensure automatic re-tuning if changes or disturbances threaten air-conditioning reliability;

- Support higher rack operating temperatures due to quick response times; and
- Operate fewer computer room air conditioners.

On the individual consumer product level, HP has introduced products such as the dc5700, dc5750 and dc7700 desktop PCs, which offer configuration options to use as little as half the energy of standard computers.

Through energy-efficient projects, including data center consolidation and using our own energy-efficient products and solutions, HP reduced our energy use by 27 million kWh/year (\$1.9 million) in 2006. The company’s overall goal is to reduce its global energy use by 20 percent below 2005 levels by 2010.

Remarkable reuse and recycling

HP’s product reuse and recycling program has long been renowned among the industry’s best. HP offers customers several choices to manage aging or unwanted computers while also minimizing the impact on the environment.

“We feel it’s our duty as a business that’s both environmentally conscious and bottom-line conscious to provide services for product reuse and recycling,” Tiernan says. “The bottom line is that if there is value to the product, we will buy it back. If not, we will recycle it.”

HP reuse and recycling services are available in more than 50 countries, regions and territories. In fact, last year, the program became the industry’s first to reach the milestone of 1 billion pounds of recycled electronics, and HP expects to recover (reuse and recycle) another billion pounds of materials by 2010.

Various plastics and metals recovered from HP’s recycled products have been used to make a range of new products, from auto body parts to plastic toys to fence posts to roof tiles. What’s more, last year, HP released the rp5700 Long Lifecycle Business Desktop PC, made with as much as 95 percent of recycled components.

The business case

While there are a number of reasons why conserving energy and reusing products makes good business sense, the most straightforward example is that more and more customers are requiring it. Translation: If you don’t play by our rules, you’re not invited to our game. For example, governments as well as enterprise customers increasingly depend on eco-labels, such as ENERGY STAR, as standards for purchasing environmentally responsible products.

“If we didn’t have products that meet the criteria, we would be excluded from these markets,” said Tiernan. “That would not make good business sense.”

In 2006 alone, HP recycled the equivalent weight of more than 600 jumbo airliners globally—a 16 percent increase over 2005.

HP Labs advances sustainable IT with new research projects

“HP Labs will lead the industry in developing the technology that could dramatically reduce energy consumption and the carbon footprint of entire industries.”

HP has new research initiatives from HP Labs, the company’s central research arm, aimed at developing new technologies and business models that leave a lighter carbon footprint.

Initially, HP Labs will focus its research in sustainability on three major projects, including: an industry-first initiative to reduce the carbon footprint of data centers by 75 percent; groundbreaking research to replace copper wiring in servers with laser light beams; and tools for measuring and managing the amount of energy used to develop products.

Sustainability is one of five major research themes of the newly redesigned HP Labs, which recently refocused its efforts to address the most complex challenges facing technology customers in the next decade.

“HP’s long-standing commitment to the environment is second to none in the technology industry. Today, HP Labs extends our dedication with these important research initiatives that will advance the state of the art in sustainable IT,” said Prith Banerjee, senior vice president, research, and director, HP Labs. “HP Labs will lead the industry in developing the technology that could dramatically reduce energy consumption and the carbon footprint of entire industries.”

The ultimate sustainable data center

HP Labs unveiled its Sustainable Data Center project, which is focused on reducing the carbon footprint of data centers by 75 percent while simultaneously reducing the total cost of ownership. For example, an average data center that consumes five megawatts of electricity annually could power more than 4,300 homes in the United States for a year. This research

project will enable companies to drastically reduce the amount of electricity consumed in the data center.

Under the leadership of Chandrakant Patel, HP Fellow and Director of the Sustainable IT Ecosystem Lab, researchers will study how energy is used and managed for the entire lifetime of a data center, from its design, synthesis, operation and end-of-life for its components. The research team, which includes computer scientists, materials scientists, physicists, and mechanical and electrical engineers, will use this information to develop data center technologies that achieve a massive reduction in resource consumption while maintaining performance, reliability and uptime requirements.

HP expects this research to open up new markets for its business by extending the technology to other areas such as smart buildings, grids and print factories.

Replacing copper with light to improve energy efficiency

A second sustainability research initiative is focused on replacing the copper-based electrical connections used in today’s IT systems with optical laser communication links.

The Photonic Interconnect project, led by HP Senior Fellow and Director of Information and Quantum Systems Lab, R. Stanley Williams, builds on years of research dedicated to building photonic optical connections and components.

Photonic interconnections make it possible to fit dozens, and eventually hundreds, of processors on server system chips. In addition, the optical connections are 20 times more

efficient than what is on the market today and will save companies multiple gigawatts of power annually, thus driving down IT costs. The photonic interconnects, which range in distance from 100 meters to 100 nanometers, also enable more flexible system configurations that can be quickly redeployed based on business needs.

New approach for modeling and measuring energy and material use

HP Labs also introduced a new project, to be led by Patel, focused on developing a set of tools that can model, predict, measure and manage the environmental impact of product manufacturing, supply chains and business processes.

HP will develop software and services tools to measure and manage key environmental impact metrics, such as carbon emissions, total energy usage and non-recoverable energy consumption. HP will use the tools to help customers re-engineer their businesses to be more sustainable and cost-effective through the innovative use of IT. This project will initially focus on three primary areas:

- HP Labs researchers are developing analyses of commercial printing and publishing industries that compare the sustainability impact of their current business models against a reduced impact that would result from the deployment of new research technologies. The aim is to identify and quantify how such research technologies can be best deployed to increase efficiency and reduce resource and energy use as well as carbon emissions. HP plans to extend this research to its customers in other vertical industries.

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HP Labs advances sustainable IT with new research projects (continued)

- HP Labs researchers have developed a unique approach to quantify the costs and environmental impact of a product by looking at the amount of available energy, known as exergy, that was used in that product's lifecycle from extraction, manufacturing, shipping, usage and recycling. HP Labs and the University of California at Berkeley have jointly developed the Lifetime Exergy Advisor, a software tool designed to assess a product's total environmental impact through joules, units of available energy. The Lifetime Exergy Advisor can help organizations determine the environmental benefits gained from using alternative materials and processes across every phase of the product lifecycle. HP believes that as the world's energy resources are increasingly tapped, companies will measure the amount of joules associated with the creation of a product much the way they measure

dollars, so joules will be valued as much as currency.

- To harness the knowledge of the world's leading experts in sustainability, HP Labs researchers plan to create an open online resource, called a "sustainability hub," to gather and share data and information about the sustainable design of products. Sustainability experts, researchers, scientists, engineers and academia from around the world are invited to contribute to the hub, which will have a repository of research information dedicated to the development of tools and methodologies for sustainability. The sustainability hub is expected to be available to the public in 2009. HP Labs intends to apply the data in future research to quantify the amount of available energy used when new products and supply chains are created across the entire global ecosystem.

HP reduces environmental impacts

By James Cook, VP Data Center Transformation

HP is a leader in designing green technologies into our enterprise products, and we've applied these same technologies to our own IT resources. For example, we've consolidated our eighty-five worldwide data centers into six environmentally friendly data centers in three locations.

This consolidation has generated significant energy savings through:

- Energy-efficient power and cooling
- Improved temperature management using "thermal zone mapping"

- Technology that optimizes DC power use and provides cooling as-needed
- A 200,000 square foot reduction in "white space"

As a result of these steps, HP expects a nearly 60 percent reduction in electricity use—enough to power every home in Palo Alto, California for a year.

Even print cartridges go green

By Terry Larsen

Consistent with HP's approach to provide products and services with the environment in mind—from product design through manufacturing, use and recycling, HP print cartridges are designed to help reduce energy consumption and waste. For example HP's recent packaging innovations for HP LaserJet and inkjet products alone will reduce greenhouse gas emissions by over 37 million pounds of CO₂ in 2007. That's the equivalent to growing 325,000 tree seedlings for 10 years.

Over 15 years ago, HP's industry-leading Planet Partners recycling program was created to make it easy to recycle HP print cartridges, printers and other technology products responsibly. With operations in over 50 countries, HP has to date recycled

1 billion cumulative pounds of electronics and HP print cartridges with a goal of doubling our annual recovery rate to reach 2 billion pounds by 2010.

From the design perspective, HP reduces waste during use by engineering printers, cartridges and media to work together. Original HP print cartridges have fewer waste-creating problems—such as jamming, poor print quality, and inconsistent toner and ink yields. The design efforts also insure HP can effectively "demanufacture" and/or recycle printers and cartridges.

HP Data Center Consolidation Results:

- Decreased number of data centers from 85 to six
- Decreased number of data marts from over 762 to one enterprise data warehouse
- Decreased number of applications used by 58%

HP offers technology to cut the Internet's energy bill

BY Jon Fortt, Big Tech CNN/ Fortune Blog

The Internet is hot. Not just hot as in popularity. Hot as in heat.

It's so hot, in fact, that data centers—those expensive warehouses full of computers that serve up information—are racking up huge power bills. According to Hewlett-Packard's (HPQ) calculations, a large data center with 70,000 square feet of space might guzzle \$10.4 million worth of power in a year. Data centers require so much energy that over a three-year period, the computers inside could easily cost a company as much to plug in and cool as they did to purchase in the first place.

To deal with the power problem, and make some money in the process, HP weeks ago began selling a homegrown technology called Dynamic Smart Cooling. Today, the company is releasing numbers

it hopes will convince customers that the technology works.

When HP installed a Dynamic Smart Cooling system in a data center in Bangalore, it managed to cut cooling costs by 40 percent. If those results bear out in other settings, companies that operate multiple data centers could see millions of dollars in savings.

John Sontag, Director of Virtualization and Datacenter architecture for HP Labs, said HP had previously offered cooling numbers based on an installation in a tiny 3,000-square-foot U.S. data center. He expects that these numbers will be more convincing. "We've had a strong belief all along that our solution would scale," he said.

Dynamic Smart Cooling works something like a high-tech home thermostat. In a typical big-company installation, thousands of tiny sensors measure how much heat computers in a data center give off. The sensors then pass the information to an intelligent air conditioning system that decides which areas of a vast server farm need to be cooled, and how much.

That method is different from the standard practice in data centers, which is to blast air conditioners all the time. Like a thermostat that cools a home only when it's hottest and when people are home, the flexible approach of Dynamic Smart Cooling uses less energy.

HP estimates that it will typically take five months from when it initially briefs a customer on Dynamic Smart Cooling to when

a customer flips the switch and begins using the technology.

HP is one of several companies, including Intel (INTC), Advanced Micro Devices (AMD), and Sun Microsystems (JAVA), looking for ways to make data centers more efficient. And the market for efficient technology will probably be around for a while: According to the Department of Energy, U.S. data centers accounted for 1.5 percent of country's electricity use last year, more than all the color televisions combined.

As long as companies like Apple (AAPL) Google (GOOG), Yahoo (YHOO) and Microsoft (MSFT) keep investing in audio, video and social networking services, there will be demand for more data centers.

Accurate measurement is the key to improving data center efficiency

By Christopher G. Malone, Ph.D HP Fellow

Data center efficiency has been generating increased attention over the past few years due to ever growing demand for computing resources. Increased server energy consumption has affected not only energy costs, but also the infrastructure costs of supporting the server, which in many cases have exceeded the costs of the servers they support.

The importance of energy efficiency has led to the creation of a variety of green energy forums and activities. For example:

- The Green Grid consortium develops and promotes energy efficiency standards, processes, measurements, and technologies
- An industry white paper has been written for developing efficiency metrics for servers
- President Bush signed a bill authorizing the Environmental Protection Agency (EPA) to study efficiency in IT equipment

and data centers, and the EPA is in the process of drafting a report to recommend government action for curbing growing data center power consumption

In light of the increased attention given to server energy consumption, efficiency continues to improve dramatically each year. Server performance has increased approximately 75 times between 1999 and late 2006. In the same period, performance per watt has increased 16 times, essentially doubling every two years.

Demand for compute cycles has exploded in the wake of the steadily decreasing cost of computation and the growth of the Internet infrastructure. As the cost per cycle drops, demand grows and more applications achieve an acceptable ROI.

As customers add denser, higher-power equipment to meet growing demand, a key challenge lies in powering and cooling ever-expanding data centers. Gartner

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HP launches solar power installation

By Betsy Walton

San Diego, California: A warm, seaside haven known for its blue skies, sun-drenched beaches, and world-famous zoo. But for HP's Kevin Cowen, the root of San Diego's appeal lies in something much more practical. "Free energy!" he says excitedly. And lots of it.

That's because San Diego is home to HP's first-ever large-scale solar power installation—a project that, once completed, will transform the region's famously reliable sunshine into 1,676,000 kilowatt hours of electricity—enough to provide more than 10% of HP's energy use locally. "That's a huge amount of power, any way you cut it," says Cowen, who manages the project for HP's Real Estate and Workplace Services (REWS) team.

How it will work:

SunPower Corporation will soon install a series of 5,000 solar panels atop five of HP's seven San Diego buildings. Those

panels, which are made up of many smaller "photovoltaic" cells will convert the sun's light energy into electrical energy. And best of all, the \$8 million installation won't cost HP any money. There are no up-front costs or capital expenditures," says Cowen. "None."

That's because, under an innovative program called a "power purchase agreement," SunPower will turn much of HP's roof in San Diego into something akin to a small, renewable power plant. "SunPower will pay for the installation and maintenance of the system for the next fifteen years," says Cowen, "and in exchange, we'll be able to buy back solar power from them at a reduced, locked-in rate."

It's all part of the California Solar Initiative, a governmental program that aims to increase solar energy use by promoting the installation of small and mid-sized solar power generators. The

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State provides rebates directly to solar power providers, such as SunPower, who in turn share the benefits with their customers, like HP, in the form of reduced energy rates. "Thanks to the power purchase agreement," says Cowen, "we estimate that HP will save hundreds of thousands of dollars over the next fifteen years."

That's because the agreement allows HP to lock in the rate it will pay for electricity for the next fifteen years. That rate will start

at 12.2 cents per kilowatt hour—slightly lower than the current going rate—and rise by a maximum of 4% a year, whereas electricity rates in the area typically increase an average of 6% per year.

"Energy costs are one of HP's highest operational expenditures," says Steve Brashear, REWS vice-president. "As a result, finding ways to reduce HP's overall energy costs and usage is a major company priority."

That priority dovetails nicely with HP's commitment to reducing its impact on the environment. The company will earn "renewable energy credits" (RECs) for its San Diego solar power system, since the installation will reduce carbon dioxide (CO2) emissions by over a million pounds per year, or nearly 16 million pounds over the next fifteen years. "That's the equivalent of removing 106 cars from the roads, or not driving over 1.3 million miles each year for the next fifteen years," says Brashear.

San Diego is home to HP's first-ever large-scale solar power installation.

predicted recently that half of the world's data centers will run out of power by the end of 2008. Hence, the industry is advocating efficiency metrics to set the foundation for a server metric to promote further improvements.

Efficiency claims made on behalf of data center infrastructure technologies are essentially hearsay and marketing hype. In fact, there is no established method for benchmarking data centers and comparing them over time. Hence, we need a way to quantify actual improvements.

A useful metric would help customers answer the following questions:

- How well are you running your data center relative to others in the industry?
- Are your new data centers more efficient than the old ones?
- Which data center(s) should you retire?
- Does implementing best practices really improve efficiency?
- Do new technologies actually perform as suppliers promised?

Ultimately, there should be a standardized rating for data centers. An efficiency metric called Power Usage Effectiveness (PUE) was first introduced in 2006 and has since been adopted by the Green Grid for measuring data center efficiency, which recommends that PUE be measured in every data center.

PUE captures the actual cost to the business per watt of IT equipment power. It is defined as the ratio of the total facility power in the data center divided by the power of the IT equipment on the raised floor.

Total facility power is the amount required to operate the data center, including all IT equipment operation and cooling infrastructure, e.g., switch gear, uninterruptible power supply, chiller, cooling tower, air conditioners, liquid conditioners, etc. IT equipment power is defined as the actual power drawn by all IT equipment in the data center, not including power losses associated with conditioning and reducing voltage from the utility.

PUE is useful for understanding the total amount of energy consumed by IT equipment relative to total power.

The annual energy cost for a server, storage unit, etc., is determined using the following equation:

$$\text{Annual Energy Use Cost} = (8760 \text{ hrs/yr}) \times (\text{Average Utility Rate in } \$/\text{kW-hr}) \times (\text{Equipment Power in kW}) \times \text{PUE}$$

The importance of this metric is highlighted by the Green Grid's adoption of PUE as the efficiency metric that the industry should start using for both benchmarking purposes and calculating energy costs as shown in the above equation.

While PUE captures data center efficiency, we still need a way to capture the efficiency of data center power used for computing. To determine computational efficiency, a new metric is introduced called Compute Power Efficiency (CPE).

CPE determines the percentage of total facility power actually used for computing. It compares IT hardware efficiency with data center infrastructure efficiency. This metric can be applied to an individual server or an entire data center, as long as weighted average utilization can be determined. In many data centers, enterprise server utilization is typically 20 percent or less. This means that, for a typical, well-managed data center with a PUE of 2.0, the CPE is 10 percent or 1W for every 10W of utility power actually used for computing. Data centers with a PUE of 3.0 have a CPE of 6.7 percent.

Our preliminary CPE analysis indicates tremendous energy waste from over-provisioning compute and cooling resources in most data centers. To fully address the cost of an IT operation, CPE must be optimized.

The Power Usage Effectiveness (PUE) metric is a useful benchmark for improving data center operations. With broad industry adoption and the support of government agencies such as the EPA and the European commission, we hope to capture PUE figures for data centers worldwide

and develop a comprehensive database. Once we truly understand data center design, implementation, and operation, we can measure and improve efficiency much more effectively.

IT Green Facts:

- HP named as the only High Tech Firm to the Fortune Magazine Top 10 Green Giants:
"HP has been recycling computer equipment, consolidating their data centers, and offers customers a holistic solution for reducing power consumption in data centers. These efforts resulted in the reuse of 2.5 million products a year and contributed to more than 1 billion pounds of recycled electronic products since 1987." (Fortune Magazine, April 2007)
- Next year, half the world's data centers will be functionally obsolete due to insufficient power & cooling.
- 90% of all companies over the next five years will experience power failures and limits on power availability that interrupt data center operations. Financial firms can lose as much as \$6.5 million every hour due to outages.
- Virtualization cuts Data Center power bill by 30% to 40%.
- Processors are 30% of server power consumption. Low power processors cut that in half.

Barclays selects HP to become first in Europe to roll out Dynamic Smart Cooling for new energy-efficient data center

Implementing HP Dynamic Smart Cooling technology is the latest of several worldwide energy-efficiency initiatives between the two companies.

HP and Barclays today announced that they have signed a letter of intent to introduce HP technology that is expected to significantly reduce energy consumption and carbon emissions associated with Barclays' new major data center in Gloucester, U.K.

HP Dynamic Smart Cooling technology is part of a package of energy-saving measures that will allow Barclays to save up to 13.4 percent of total energy used for its data center. These measures will reduce its carbon footprint by approximately 7,470 metric tons of carbon dioxide (CO2) per year.¹

As a result of growing demand for technology, energy costs associated with data centers are rising rapidly. Many centers are running close to the limit of their air conditioning systems and the power they can draw from the grid. With their increasing need for power, data centers are becoming large contributors to the carbon footprint of many companies.

HP Dynamic Smart Cooling technology actively manages a data center's air-conditioned environment to deliver the right amount of cooling where it is needed most. The energy provisioning system uses advanced control software fed by continuous, real-time air-temperature measurements from a network of sensors throughout a data center. The system then continuously monitors and adjusts the air handlers to modulate cooling energy based on demand from the servers and storage devices.

The benefits to Barclays are clear: savings on energy consumption as the air conditioners are used more efficiently; faster response to changes in temperature; and, generally less strain on the chillers that cool the air around the data center.

"Last November, as part of the CBI Climate Change Task Force, Barclays made

a clear commitment to focus on further reducing the carbon impact of our buildings, technology and travel," said Marcus Agius, chairman, Barclays Group. "This announcement is an important step towards delivering just that. Efficient energy management is at the heart of our technology infrastructure, and we are investing to use the best technology available. We are proud to be one of the first companies in Europe to implement HP's Dynamic Smart Cooling technology."

Francesco Serafini, managing director for Europe, the Middle East and Africa at HP, said: "HP has a close working relationship with Barclays, and our companies share a commitment to utilizing technology to drive better business and environmental outcomes. The letter of intent provides for HP to deliver a complete solution that will allow Barclays to transform its data center, enabling scalable technology capability with energy cost savings that should significantly reduce its carbon footprint."

Implementing HP Dynamic Smart Cooling technology is the latest of several worldwide energy-efficiency initiatives between the two companies. Prior work includes power-optimized servers, HP BladeSystem and HP Thermal Logic technology adoption, and virtualization-based consolidation. These initiatives have already achieved a range from 18 percent energy savings per server to 40 percent energy savings per data center for Barclays' technology services around the globe.

More information about HP Dynamic Smart Cooling is available at www.hp.com/go/dsc.

Barclays environmental targets

Barclays set new environmental improvement targets in 2005, which support its approach to managing its climate change impacts.

Climate change targets for 2006-2010 include:

- Reduce CO2 emissions by 20 percent by 2010 (using 2000 as the baseline year).
- Reduce carbon intensity from 16.8 tonnes to 12.9 tonnes CO2 per £m of UK income (using 2005 baseline.) Carbon intensity is a measure of emissions relative to business growth and it allows comparisons to be made between companies.
- Reduce energy consumption in offices and branches by 20 percent per full-time employee (FTE) (using 2005 as the baseline).

Barclays climate action program

At the center of Barclays' approach to managing its impact on climate change is a six-point program that sets out priorities for carbon management across the company's global operations.

- Reduce carbon dioxide (CO2) emissions by improving energy efficiency.
- Buy more renewable energy.
- Make operations carbon neutral by offsetting remaining carbon emissions.
- Work with suppliers to help reduce their carbon emissions.
- Develop products and services that help customers reduce their impact on climate change.
- Engage with key stakeholders and contribute to the debate on climate change action.

¹Based upon 100 percent utilization. Department for Environment, Food and Rural Affairs (DEFRA) Guideline CO2 conversion factor. The amount of CO2 saved is calculated as 7,469 tonnes, calculated using the most up-to-date DEFRA guideline energy to CO2 conversion factor.

HP Labs proves existence of new basic element for electronic circuits

“Memristor” discovery could lead to far more energy-efficient computing systems with memories that don’t forget, never need to be booted up.

Memristor-based memory and storage has the potential to lower power consumption and provide greater resiliency and reliability in the face of power interruptions to a data center.

Researchers from HP Labs, the company’s central research facility, have proven the existence of what had previously been only theorized as the fourth fundamental circuit element in electrical engineering.

This scientific advancement could make it possible to develop computer systems that have memories that do not forget, do not need to be booted up, consume far less power and associate information in a manner similar to that of the human brain.

In a paper published in today’s edition of *Nature*, four researchers at HP Labs’ Information and Quantum Systems Lab, led by R. Stanley Williams, presented the mathematical model and a physical example of a “memristor”—a blend of “memory resistor”—which has the unique property of retaining a history of the information it has acquired.

Leon Chua, a distinguished faculty member in the Electrical Engineering and Computer Sciences Department of the University of California at Berkeley, initially theorized about and named the element in an academic paper published 37 years ago. Chua argued that the memristor was the fourth fundamental circuit element, along with the resistor, capacitor and inductor, and that it had properties that could not be duplicated by any combination of the other three elements.

Building on their groundbreaking research in nanoelectronics, Williams

and team are the first to prove the existence of the memristor.

“To find something new and yet so fundamental in the mature field of electrical engineering is a big surprise, and one that has significant implications for the future of computer science,” said Williams. “By providing a mathematical model for the physics of a memristor, HP Labs has made it possible for engineers to develop integrated circuit designs that could dramatically improve the performance and energy efficiency of PCs and data centers.”

One application for this research could be the development of a new kind of computer memory that would supplement and eventually replace today’s commonly used dynamic random access memory (DRAM). Computers using conventional DRAM lack the ability to retain information once they lose power. When power is restored to a DRAM-based computer, a slow, energy-consuming “boot-up” process is necessary to retrieve data from a magnetic disk required to run the system.

In contrast, a memristor-based computer would retain its information after losing power and would not require the boot-up process, resulting in the consumption of less power and wasted time.

This functionality could play a significant role as “cloud computing” becomes more prevalent. Cloud computing requires an IT infrastructure of hundreds of thousands of servers and

storage systems. The memory and storage systems used by today’s cloud infrastructure require significant power to store, retrieve and protect the information of millions of web users worldwide.

Memristor-based memory and storage has the potential to lower power consumption and provide greater resiliency and reliability in the face of power interruptions to a data center.

Another potential application of memristor technology could be the development of computer systems that remember and associate series of events in a manner similar to the way a human brain recognizes patterns. This could substantially improve today’s facial recognition technology, enable security and privacy features that recognize a complex set of biometric features of an authorized person to access personal information, or enable an appliance to learn from experience.

Williams is the founding director of HP Labs’ Information and Quantum Systems Lab, which is focused on turning fundamental advances in areas of mathematics and physical science into technologies useful for HP. For the past 12 years, Williams and his team have conducted primary scientific research into the fundamental limits of information and computing, which has led to a series of breakthrough discoveries in nanoelectronics and nanophotonics.

Transformation and Virtualization

HP encourages CIOs to rethink virtualization in business terms

New offerings vastly simplify virtualization implementation, management.

HP released new products, services and solutions designed to simplify the implementation and management of virtualization so that the technology delivers greater business value.

Recent global research conducted on behalf of HP revealed that while 86 percent of technology decision makers have implemented virtualization projects, the vast majority of respondents expect to have virtualized just 25 percent of their technology environments by 2010.⁽¹⁾

While many of those surveyed anticipate eventually reaching 75 percent virtualization of their total environments, only one-third of these technology implementers recognize virtualization as a valuable business tool. Two-thirds of implementers relegate virtualization to the role of technology enabler.

“Virtualization is a powerful step in transforming IT,” said Ann Livermore, executive vice president, Technology Solutions Group, HP. “To do it right means successfully managing and automating mixed physical and virtual environments. HP delivers the industry’s broadest portfolio for virtualized environments, covering applications and operations management, infrastructure and client architectures.”

HP’s approach to virtualization is focused on removing the technology inhibitors that reduce virtualization’s impact on the business. It highlights how applications and business services can perform well regardless of where and how they are hosted, networked or managed. It dramatically simplifies management across a combined virtual and physical world, and it addresses the issue of pooling infrastructure resources across an organization.

New offerings from HP support business needs that span the desktop to the data center. They are focused on lowering operational cost, mitigating the risk of a heterogeneous environment and freeing resources to deliver new business services. These offerings are designed around three specific areas: applications and operations management, overcoming infrastructure barriers, and maximizing client architectures.

Rethink ... applications and operations management

HP Business Service Management (BSM) and IT Service Management (ITSM) solutions have been enhanced with new virtualization monitoring and support capabilities to seamlessly link business services to the physical and virtual resources that deliver and manage them. This leads to faster deployments, lower costs and quicker problem resolution.

- HP Operations Agent, HP Performance Agent and HP SiteScope software have been enhanced with hypervisor management capabilities, including the ability to collect management data to automate event and availability monitoring and management processes across heterogeneous infrastructures.
- HP Network Node Manager i-series has been updated to monitor the performance and availability of networks supporting dynamic, virtualized environments. This allows customers to proactively plan and monitor network capacity.
- New HP Asset Manager software identifies and manages virtual machine asset inventory and licenses, allowing customers to pay for only the licenses they need.

- A new strategic development agreement with Red Hat simplifies the monitoring and management of virtualized environments.
- New and enhanced HP Virtualization Support Services achieve a smooth transition to, and ongoing management of, new virtualization technology while reducing the risk of unplanned downtime.

Rethink ... infrastructure barriers

Current infrastructure was not designed to take complete advantage of virtualization. New HP offerings are designed to lower costs, mitigate the risk of downtime and free up resources that can drive additional business services to support growth.

- The HP ProLiant BL495c virtualization blade is the world’s first server blade designed specifically to host virtual machines. The BL495c eliminates key virtualization performance bottlenecks of memory, data storage and network connections.
- HP StorageWorks 4400 Scalable NAS File Services integrates the HP StorageWorks 4400 Enterprise Virtual Array, file servers, management software, and Microsoft Windows® or Linux support to virtualize the connection between servers and storage. The solution lowers maintenance costs and mitigates the risk of data loss with advanced replication software.
- HP-UX 11i V3 and the HP Virtual Server Environment have been enhanced for mission-critical virtualization with significant performance improvement, automated optimization, improved protection and simplified management capabilities.

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HP’s approach to virtualization is focused on removing the technology inhibitors that reduce virtualization’s impact on the business.

HP helps customers manage business growth with compact, shipped-to-order data centers

HP has a container-based data center offering that enables customers around the globe to rapidly expand their data center capacity in support of their IT and business growth.

Keeping pace with the demands of technology growth in the data center and rising energy costs is a constant challenge as companies seek to deploy the latest technologies. The extended time and significant costs required to update or expand data centers make these challenges even more complex.

As the first offering of its kind designed specifically to deliver a wide range of industry-standard technology, the HP Performance-Optimized Data Center (HP POD) addresses these challenges by:

- Supporting a wide variety of HP and third-party technology, providing cus-

tomers with more freedom to match their technology environments

- Providing customers with more density than competitive offerings by supporting more than 3,500 compute nodes, or 12,000 large-form-factor hard drives, in a 40-foot shipping container
- Delivering the equivalent of 4,000-plus square feet of typical data center capacity that ships within six weeks of the customer's order
- Offering flexible configurations optimized for power or density, which enables customers to quickly upgrade or extend the capacity of their physical infrastructures to meet their specific business needs
- Providing HP POD Infrastructure Services, including assessment, preparation and deployment services, as well as

data center design and planning through EYP Mission Critical Facilities, a company of HP

"Customers have more flexibility to balance their capital expenditures and operating expenses while quickly and seamlessly meeting their needs for additional capacity with HP PODs," said Christine Martino, Vice President and General Manager, Scalable Computing and Infrastructure Organization, HP. "HP's innovative POD approach allows customers to deploy world-class, scalable, highly power-efficient data center resources quickly and ships in just six weeks."

Learn more about HP PODs

HP PODs are built to order and delivered through HP Factory Express, HP's customization, configuration and integration services organization. HP

PODs can deliver a wide range of servers, storage and networking equipment, ready to power on at the customer's site.

- More information about the HP POD products, software and services is available at www.hp.com/products/pod.
- An HP POD virtual video tour is available at www.hp.com/go/pod.
- Behind-the-scenes commentary from the HP POD design team is available on the new Server Reality Check blog www.communities.hp.com/online/blogs/reality-check-server-insights/default.aspx.
- Additional information about HP's scalable computing and cloud infrastructure portfolio is available at www.hp.com/go/massivescaleout.

HP BladeSystem for Oracle optimized warehouse

Good business decisions require timely, accurate information, but deciding how to store, access, and use information can drive you crazy. Choosing the right technology is key.

Great news: Now you can get a scalable, optimized infrastructure, specifically configured as your data warehouse platform, in the HP BladeSystem for Oracle® Optimized Warehouse (BladeSystem OOW).

Superior performance

A superior data warehouse needs a robust infrastructure. That's why HP built the Oracle Optimized Warehouse on the HP BladeSystem c-Class. The BladeSystem combines the essential elements of a data warehouse infrastructure—compute, storage, interconnect, and management—into a modular, self-optimizing unit. It cuts power and cooling costs by 40 percent and cable count by 94 percent, and it delivers unmatched performance in the 1

to 4 TB (terabyte) data warehouse market segment.

Compared to other 1 to 4 TB Oracle Optimized Warehouse solutions, the BladeSystem OOW delivers 250 percent better input/output (I/O) performance, using 65 percent less power per megabyte of I/O.

Achieving performance like this in a pre-configured, ready-to-run package is no accident—it's the result of exhaustive testing, detailed tuning, and the right HP hardware choices. For example, the HP 4X DDR InfiniBand HCA and Switch Module for BladeSystem lets data move directly between server blades memory and storage blades for extremely rapid data transfer, low latency, and minimal burden on other infrastructure resources.

The same holds true for the HP 1/10 Gb Virtual Connect Ethernet Module. HP Virtu-

al Connect delivers all the benefits of conventional integrated Ethernet switching, including port aggregation, failover, stacking and more, but unlike conventional switches, HP Virtual Connect looks like a pass-thru device to your network. The resulting simplified management can make adding the BladeSystem OOW to an existing network as simple as plugging in a cable.

Headache-free deployment

HP and Oracle have collaborated to develop a value-added reseller network with world-class expertise in data warehouse and business intelligence solutions. These VARs can deliver a ready-to-run HP BladeSystem OOW to or tailor a complete business intelligence infrastructure on top of BladeSystem OOW to meet customers' exact needs.

To find out more about the HP BladeSystem for Oracle Optimized Warehouse, or to

locate an authorized HP/Oracle VAR, visit www.hp.com/go/owi.

Benefits at a glance

HP BladeSystem is simply a smarter way to build your data warehouse infrastructure

- Consolidated from the start to reduce acquisition and operational costs
- HP Thermal Logic to pool and share power and cooling to improve energy efficiency
- HP Insight Control to manage infrastructure and automate routine tasks from a single console
- HP Virtual Connect to reduce cables by 94 percent without adding switches to manage

Oracle is a registered U.S. trademark of Oracle Corporation, Redwood City, California.

The promises and risks of service-oriented architecture (SOA) in the financial services industry

SOA governance is about managing the quality, consistency, predictability, change and interdependencies of services.

Executive summary

The paradox is unavoidable: In an era when firms aspire to agility, adaptability and ease of maintenance in their application portfolios, many are still saddled with leaden systems built to last—not to change. Meanwhile, the financial services industry faces two contradictory challenges: Increased commoditization of financial products means banks and other institutions must now differentiate based primarily on customer service. But the channels through which they serve customers are typically information “silos” comprised of proprietary systems and custom interfaces that are unable to provide a complete 360-degree customer view. Today’s institutions need a flexible IT infrastructure that supports change.

More and more of them are turning to a service-oriented architecture (SOA) that supports the concept of delivering IT as a service in which business processes drive the definition, creation and execution of services. SOA unlocks the existing dependency of business process on the IT implementation. However, if not planned, designed and built properly, SOA can introduce a significant degree of business and IT risk.

To realize the full promise of SOA, institutions must first understand that a governance strategy is critical. SOA governance is about managing the quality, consistency, predictability, change and interdependencies of services. It’s vital that SOA services and other artifacts be managed not in isolation, but across a complete lifecycle.

HP Business Technology Optimization (BTO) delivers a comprehensive strategy for SOA success, verifying that every dollar invested in IT, every resource allocated and every application in development or production meets business goals. BTO supports a complete lifecycle approach for managing SOA

implementations, enabling IT leaders in the financial services world to help verify that services are designed, developed, adopted, implemented and managed properly.

HP offers a collaborative approach across the service lifecycle—as well as a full set of integrated products and services for SOA governance, SOA quality and SOA management—to help ensure a successful SOA implementation. Partnering with HP leads to better outcomes for SOA projects—which means achieving all the benefits of SOA while taking fewer risks.

Modern cities connected by dirt roads

An astute chief executive officer (CEO) in the financial services world once described the current state of most corporate IT infra-structures as “modern cities connected by dirt roads.” Translation: State-of-the-art systems are in place to support various services, but integration among them is minimal at best. In an age when terms such as adaptive, agile and easy to maintain are widely viewed as ideals for application portfolios, many institutions are still working with systems seemingly made of cement.

Applications that were originally developed as though the status quo would never change become more cumbersome and expensive each time organizations tweak them to fit new business imperatives. Automation, while regarded as a “nice-to-have,” barely materializes because systems require constant human intervention and IT redevelopment. All too often, the alignment of technology with business objectives becomes bogged down by integration problems and the initiative seldom progresses beyond the whiteboard.

Meanwhile, the status quo has changed, and the need for system integration at financial institutions has never been greater. Today the industry is confronted with unique challenges:

- Increased commoditization of financial products means banks and other institutions must now differentiate based primarily on customer service.
- The advent of “anytime, anywhere” banking that enables customers to conduct transactions 24/7 through a variety of delivery channels means banks need to deliver a consistent customer experience across all channels—branch, call center, ATM and the Internet.
- Due to industry consolidation and a legacy of operational independence, these channels are typically information “silos” comprised of proprietary systems and custom interfaces that are often inefficient, overlapping and unable to provide a complete 360-degree customer view—making it difficult to effectively manage the customer experience across multiple channels.
- The industry continues to consolidate through mergers and acquisitions, creating combined companies using disparate systems that can’t communicate with each other and compounding the challenge of complying with an increasing number of regulatory initiatives.
- Competition is intensified across the board, accentuating the importance of customer retention and acquisition and highlighting the need to grow new revenue streams by accelerating time-to-market with new financial products and services.
- The financial services industry is continually challenged to improve its cost-to-income ratio and return on assets.

Service-oriented architecture: the key to business agility

To address the challenges of a rapidly commoditizing market space and siloed information systems, today’s financial

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services institutions need a flexible IT infrastructure that supports change. For many organizations, this means a service-oriented architecture approach. SOA supports the concept of delivering IT as a service, where business processes actually drive the definition, creation and execution of these services. This ability to adapt and create services rapidly enables greater business agility and, in essence, shifts the way we think about traditional architecture. Bringing an end to monolithic application architectures—and the associated maintenance costs—is one of the underpinnings of service-oriented IT.

SOA is the key to unlocking the existing dependency of the business process on IT implementation—delivering the agility to adapt to changing business requirements:

- SOA encapsulates and defines business processes as services that can be readily redeployed into new, flexible business processes that are available and discoverable throughout the financial enterprise—accelerating time to market.
- SOA provides the ability to securely and easily share information with partners and stakeholders by presenting a standard, coarse-grained service that any authorized business partner can use, thereby extending the enterprise.
- SOA also enables institutions to rapidly reconfigure the business process by selecting from the available set of services. SOA facilitates the ability to develop new business capabilities at lower cost while capitalizing on the need to respond to change:
- Services only need to be designed and built once, and then made accessible across the enterprise for reuse in other systems. The cost savings in development staff time alone is significant.

- Adopting SOA brings an end to monolithic application architectures and the associated maintenance costs.
- The improved linkage between business and IT delivers further cost savings; when business and IT are aligned, it's likely that the original application IT delivers will meet business requirements—reducing the need for rework.

By promoting a modular enterprise and providing consistency with highly reusable business services, SOA also addresses the need to improve operational efficiency and reduce complexity.

- Business operations are enhanced because SOA-based services enable a common architecture and approach in an enterprise containing heterogeneous legacy systems.
- Introducing new technologies is easier since SOA's coarse-grain modularity allows enhancements to services by introducing new, more-efficient technologies without changing the service interface. SOA also facilitates regulatory compliance by unlocking information formerly held in tightly coupled, brittle systems.

Good intentions are not enough.

Despite the patent advantages and benefits SOA offers, if not done right, it can also introduce a significant degree of risk—not just IT risk, but a real risk to the business:

- Building the wrong services, or building them the wrong way, means a firm won't be able to compose new applications or business processes.
- A bank could jeopardize a key business by using a service that is untested, ungoverned and unmanaged.
- There is a strong possibility that institutions may simply re-implement yesterday's solution using today's technology.

- Even after doing all the work on an SOA implementation, a firm's applications could end up more fragile and more likely to fail in production.
- Even if the applications do run, there is a real chance that the organization won't achieve SOA benefits such as lower cost or increased responsiveness. SOA requires new processes around governance, development and operation. Creating these new processes is clearly a risky endeavor—but attempting to implement SOA without them is even more risky.

Best practices for successful SOAs—a governance strategy is critical

The promise of SOA is powerful. But as organizations peel back the layers, what becomes apparent is that SOA radically changes traditional IT architectures. While SOA promises untold opportunities, it also introduces new issues around IT governance. And the reality is, without a governance strategy, SOA can lead to chaos. SOA governance is about managing the quality, consistency, predictability, change and interdependencies of services. It's about blending the flexibility of service orientation with the control of traditional IT architectures.

Full SOA governance cannot be delivered out of the box by a single technology vendor. Rather, it requires a cohesive strategy involving multiple elements that collectively deliver the quality, predictability and trust necessary for reuse. Because SOA is composed of many moving parts, it's critical that service rules are electronically codified as a set of standard, reusable policies that can be associated with services. Such a linkage between service and policy enables automated validation of services and the enforcement of specific policies.

The goal is to first create a system of record that shows, for example, what services already exist and who is using them. In the design phase, the focus

should be on policy management to provide that quality issues and non-conformance are detected before services are put into production. This means that problems are confronted early—which is less costly to correct and less disruptive to operations than dealing with issues in a production setting. Many institutions can also implement run-time policy management capabilities for monitoring and automatically enforcing policies during service usage.

The only way to achieve the promise of SOA is by managing services and other SOA artifacts not in isolation, but across a complete lifecycle. In this sense, the management of the SOA lifecycle is an intrinsic part of SOA governance.

A comprehensive strategy for SOA success

SOA success demands that financial institutions take an integrated approach that strengthens the bonds between stakeholders and leverages assets across the service lifecycle. HP Business Technology Optimization helps firms feel confident that every dollar invested in IT, every resource allocated and every application in development or production meets business goals. Unlike software offerings and methodologies that focus on internal IT processes, HP Business Technology Optimization (BTO) optimizes the strategic functions between technology and business.

- BTO supports a complete lifecycle approach for managing SOA implementations, enabling IT leaders in the financial services world to help provide services that are designed, developed, adopted, implemented and managed properly.
- BTO defines a process that spans from preproduction planning and development, testing and tuning through deployment into the production environment.

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HP SOA governance offerings enable deployment of a controlled yet flexible service-oriented environment.

- BTO maps directly to SOA governance, quality and management—which become integral parts of an iterative cycle, rather than discrete function performed by separate teams.

HP SOA services help businesses become more agile.

By enabling businesses to become more agile, HP SOA services underscore the company's strategy of helping customers transform their businesses into Adaptive Enterprises in which business and IT are synchronized to capitalize on change. The HP Services SOA portfolio includes:

- SOA Envisioning Service—is intended for large enterprises to develop an understanding of SOA concepts, benefits and potential impacts on their business
- SOA Assessment Service—uses the HP SOA Agility Assessment approach to help customers develop a comprehensive roadmap to guide the adoption of SOA across their enterprise
- SOA Governance and Architecture Service—establishes the SOA Architecture Program Office to oversee enterprise architecture and the SOA governance model as the enterprise is transformed
- SOA Enablement Service—is based on learnings from the Governance and Architecture Services; it prepares the infrastructure for the implementation of SOA
- SOA Service Development—helps customers define, develop and deploy SOA business and IT services across the enterprise, line of business, department or at a project level
- SOA Software Development Service—provides for volume and scale in development and delivery of business and IT services through the SOA adoption; a global software development capability helps increase productivity from customer development teams

- SOA Management Service—helps enterprises gain control of their SOA adoption, including lifecycle management, services management, monitoring, auditing, analysis, service level agreements (SLAs) and policies

The HP SOA delivery approach and process are based on a robust architectural foundation; extensive research and benchmarks across vertical industries; a global network of third-party providers; HP Services professionals with expertise in architecture, governance, management and security solutions; and a broad portfolio of SOA services.

Unique challenges of SOA demand a unique approach.

HP is working with numerous financial enterprises, including one of the largest diversified financial service firms in the world, to help address the challenges related to implementing an effective approach to SOA. HP delivers innovative technology such as HP SOA Manager Software, which supports both the overall creation and design of SOA, as well as providing the capabilities to monitor individual Web services for availability, responsiveness and overall conformance to SLAs.

HP BTO strategy is deployed via HP BTO strategy centers. These software product centers provide specific solutions for each phase of the SOA lifecycle: Initiate, build and operate.

SOA governance

HP SOA governance offerings enable deployment of a controlled yet flexible service-oriented environment. Leveraging technology developed by Systinet and deployed through HP SOA Center, the products provide a system of record and a set of SOA governance applications.

By acting as a single system of record for discovering and understanding business services, HP SOA Systinet software gives customers greater visibility into what services exist. HP SOA Systinet software also provides policy management

that enables policies to be created and automatically enforced to make services consistent and interoperable—before they're put into production.

HP offerings help provide quality, predictability and full transparency between consumers and providers, increasing trust. Equally important, SOA governance helps customers manage the lifecycle of business services so customers can effectively manage change.

HP SOA Systinet software, which integrates with HP SOA quality solutions, includes:

- SOA repository—manage services, metadata, artifacts and relationships.
- Registry—achieve standards-based access and interoperability.
- Policy management—automate policy and conformance validation.
- Contract management—formalize consumer/provider relationships.

SOA quality

A market-leading SOA quality management platform, HP SOA quality solution covers all aspects of the quality assurance lifecycle. It provides traceability, visibility and control, allowing quality stakeholders to make intelligent go/no-go decisions relating to the release of a service into production.

The HP SOA quality offering consists of HP Quality Center and HP Performance Center software. Integrated with HP SOA Systinet software, the centers provide a full spectrum of capabilities for managing quality, automated functional testing, business process and manual testing, load and performance testing, and diagnostics for faster time to resolution of issues. HP SOA quality offerings provide:

- Traceability from service requirements to test cases and defects
- Automated creation of tests based on the service definition

HP Services offers a complete set of services that cover the entire SOA lifecycle, regardless of where a bank is along the SOA journey.

- Full functional testing of services, provided by HP Service Test
- Validation and optimization of the performance of services
- Metrics for go/no-go decision making
- Ability to diagnose and triage problems

SOA management

HP's approach to application management for SOA is focused on helping financial firms achieve the expected value from SOA-based applications as they are deployed in IT operations.

HP Business Availability Center includes capabilities to help manage and optimize SOA environments so that business services deliver the levels of performance, quality and business value that all constituents expect. HP Business Availability Center, which integrates with HP Quality Center and HP Performance Center, delivers value in SOA environments:

- Run-time policy enforcement—systematic control of services and their supporting infrastructure requires policy-driven, model-based automation that can be induced at run-time. HP SOA Manager treats a SOA as a single system, so that as disparate lifecycle changes occur, it can keep business services and their supporting infrastructure synchronized and well behaved.
- Service level management—Maintaining trust between providers and consumers requires that they agree to specific service level agreements. Providers must then manage the services and provide visibility into how the SOA is delivering the actual services in real time, as well as provide a clear understanding of their historical performance.
- Availability and performance management—The process of monitoring services and composite applications in production in the complex SOA environment is challenging. HP is an acknowledged industry leader in monitoring performance and availability from the end user's perspective, prioritizing events according to the impact to the business. HP also provides the service-to-service monitoring.

- Problem resolution—Maintaining performance requires rapid resolution of problems. Using HP Business Availability Center, organizations can isolate performance issues in SOA distributed environments and facilitate fast problem diagnosis so that they can quickly determine the root causes of performance and availability issues and reduce mean time to repair.
- Change impact—Change in SOA environments is rapid. Firms need to reduce the risk of frequent changes in SOA environments by predicting the impact of planned changes, identifying the possibility of change collisions and monitoring changes that have been implemented so that they function correctly.
- Discovery of SOA services—To achieve the previous benefits, institutions need to have an up-to-date service dependency map. HP lets them automatically discover services, their relationships and the underlying infrastructure supporting them—as well as discover rogue services.

Start at the area of greatest pain.

HP provides a complete solution across the entire SOA lifecycle: SOA governance, quality and management.

While HP generally recommends that—after the basics of assessment and business planning—financial institutions start by addressing governance issues first, they can easily start wherever they need to—at the area of greatest pain. While they will eventually need to address all the different challenges that SOA poses, HP's solution allows organizations to start where they feel pain right now based on the state of their deployment and on their business needs.

HP Services accelerates time-to-value.

HP Services offers a complete set of services that cover the entire SOA lifecycle, regardless of where a bank is along the SOA journey—whether it has just begun to think about SOA, whether it's completed a few small SOA projects or even if it has already fully embraced and begun to implement SOA across the enterprise.

The SOA services in the HP portfolio can be roughly grouped into two areas:

1. Up-front—the SOA Envisioning, Assessment, and Governance and Architecture services are focused primarily upon helping firms with strategy and planning.
2. Follow-through—the SOA Enablement, Service Development, Software Development and Service Management services are focused on realization—that is, designing, implementing, and operating an SOA.

From dirt roads to superhighways

SOA has become nothing less than a strategic imperative for financial institutions. Those without a strategy for SOA risk being outpaced and outperformed by competitors that are better equipped to serve customers, seize opportunities and respond to change in today's fast-paced, high-stakes financial services world. However, institutions need to be aware that SOA brings new challenges that must be addressed and new complexity that must be managed before they can experience the many real benefits and advantages that are the promise of SOA.

To help make this journey, HP provides a complete solution across the lifecycle of SOA. With its BTO offerings, HP can help financial IT organizations optimize the business outcome of SOA projects. HP also provides a full set of integrated products and services for SOA governance, SOA quality and SOA management.

Implemented together, these offerings can support a complete lifecycle approach for managing SOA implementations. Firms can start by targeting the area of greatest pain in their SOA initiative. And, with HP's help, they can expect better outcomes for their SOA projects—which means achieving all the benefits of SOA while taking fewer risks.

And the “dirt roads” currently connecting siloed information systems? They morph into superhighways.



HP encourages CIOs to rethink virtualization in business terms (continued)

- HP Virtualization Accelerator Services are new, predefined consulting services for planning, designing and implementing virtualization initiatives. This yields a faster return on investment.

Rethink ... client architectures

Businesses can leverage client virtualization to achieve greater reliability, security and improved management of end-user computing. This decreases the cost of client management and support while increasing productivity.

- The new HP t5630, t5545, t5540 and t5145 Thin Clients feature scratch-resistant HP DuraFinish and provide expanded multimedia features, enhanced brokering capabilities, greater performance and improved management support.
- The HP ProLiant xw460c Blade Workstation with Graphics Expansion Blade supports a full range of graphics capability with the latest NVIDIA Quadro FX graphics. This provides more secure, easily managed data center workstation

computing for the financial trading, public sector, mechanical computer-aided design (MCAD), and oil and gas segments.

- Enhancements to the HP Virtual Desktop Infrastructure (VDI) solution include new planning, quick-start and implementation services. These services determine specific VDI needs and associated business value, so customers can implement the right solutions. HP also unveiled the new HP VDI with Citrix XenDesktop, which is designed to enable everything from smaller, entry-level implementations to enterprise-wide desktop delivery.
- “Citrix Ready” blade PCs and thin clients are now certified for use within Citrix XenDesktop environments. They deliver a dedicated one-to-one remote computing experience at radically improved economics for knowledge workers requiring a broad range of application support and a rich graphics experience.

Hotter than hot: storage blades

By Tom Ruetman

HP customers are already reaping the benefits the HP c-Class server Blades provide in terms of improving Straight-Through-Server-Provisioning (STSP) via its VirtualConnect capabilities. Now the c-Class server enclosure can also host storage Blades—a radically simple, integrated and affordable network storage solution. HP’s new StorageWorks All-In-One Storage Blade was designed to provide shared storage for the c-Class applications servers while also providing enhanced file serving and data protection software. The All-In-One Storage Blade provides 1TB of shared

storage for all of the Blades in the enclosure (3.5TB Blades are coming soon); integrated NAS, iSCSI SAN, and data protection; and wizard-based storage allocation by application. It does this while also using less power, providing better cooling and density—and at the lowest cost. It includes tools to easily migrate and manage data using best practice settings. As an example, iSCSI storage for a Microsoft Exchange Storage Group can be expertly set up and migrated in fewer than 10 mouse clicks—a real boon to the STSP performance improvements.

HP’s new StorageWorks All-In-One Storage Blade is designed to provide shared storage for the c-Class applications servers while also providing enhanced file serving and data protection software.

Dial up, dial down. Storage where and when it’s needed

By Tom Ruetman

Do not buy or lease hardware and software any longer; instead, just pay for what is used in exactly the same way as water or electricity is billed for home consumption.

HP’s aptly named Utility Ready Storage Solution is an innovative new model for acquiring storage that accommodates flexible business

demands. In the same way that houses have a water or electric meter, HP installs a storage meter that tracks storage utilization and presents a bill for the storage used. This includes both the storage solution and the services that support it—the total package. With the Utility Ready Storage, the immediate advantage is that the com-

pany does not have to pay for more storage capacity than is needed or used, while retaining the flexibility to cope with unpredictable growth and peak loads. Costs are directly related to the amount of storage used and, therefore, true business consumption. This utility approach to storage provides the ultimate vehicle to deliver

on Straight-Through-Storage-Provisioning (STSP) for a faster time to market, and also eliminates the need for the company to budget for storage refreshes and/or capacity increases. With this new approach, storage capacity investment is now a thing of the past—it’s simply a storage service.

HP expands data center services with acquisition of EYP Mission Critical Facilities

Aligning with IT and Business Goals in the Financial Industry

By Kim Gilboord

In February, HP completed its acquisition of EYP Mission Critical Facilities—joining two mission critical leaders to create a new paradigm for the delivery of high reliability, energy efficient mission critical environments. EYP MCF, the leading mission critical consulting firm focused on strategic technology planning, innovative design, and operational support for large-scale data centers, is remaining a wholly owned subsidiary of HP. Headquartered in New York, EYP MCF has approximately 350 employees with 13 offices in the United States and the UK.

By acquiring EYP MCF, HP will be better able to help customers transform their data centers, optimize energy efficiency, and position them for future business growth. Their capabilities—particularly the expertise in energy-efficient operations, complement HP's extensive data center services and cost-saving power and cooling solutions, such as Dynamic Smart Cooling. According to Peter Gross, CEO of EYP MCF, "World-wide data center requirements are rapidly growing, with significant year-over-year increases in power consumption, which is fueling demand for energy-efficient power and cooling strategies. HP and EYP will drive innova-

tion by integrating IT infrastructure into the planning and design of the data center, enabling the customer's whole organization to be more energy efficient."

"The data center is the foundation of IT for enterprises, an essential building block for driving business growth and adapting to changing business objectives," said John McCain, Senior Vice President/General Management, HP Services. "Acquiring EYP Mission Critical Facilities boosts HP's ability to help customers transform their data centers and build dynamic computing environments from the ground up."

What does this mean for HP customers? Peter Gross, EYP MCF's CEO states, HP's acquisition of EYP provides the framework for wider capabilities to respond to a bank's stringent technology objectives and to provide new solutions to meet their needs."



HP grows BladeSystem portfolio with Integrity blade for large data center workloads

HP has expanded the HP BladeSystem portfolio with an Integrity blade designed to handle memory-intensive data center workloads while helping businesses lower cost, save energy and space, and decrease deployment time.

As the company's first four-socket Integrity server blade, the HP Integrity BL870c combines the modular infrastructure and energy efficiency of HP BladeSystem with the business-critical capabilities of Integrity servers.

The new server can help businesses of all sizes realize power savings of up to 25 percent. Space requirements also are reduced because 2.5 times as many BL870c server blades fit into the same space as a comparable rackmount.

To help take the guesswork out of building an Integrity blade solution, HP also has created Solution Blocks for its Integrity servers. These HP-tested configurations allow customers and resellers to quickly deploy business-critical applications on the HP BladeSystem.

"The BL870c expands the BladeSystem portfolio into the heart of the business-critical market, combining the benefits of blades around cost, time, change and energy, with the proven scalability and availability of Integrity systems," said Mark Potter, Vice President, BladeSystem, HP. "With this server, we now address the broadest spectrum of workloads with a blade infrastructure in the industry. Our commitment to innovation is

unmatched and we'll continue our 'blade everything' strategy where it helps customers align their technology with the needs of their business."

Business-critical computing advantages

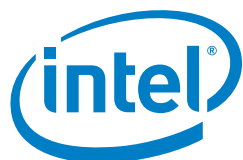
The HP Integrity BL870c addresses more application workload demands by expanding the Integrity server blade portfolio for the HP BladeSystem c3000 and c7000 enclosures. The addition of the BL870c to the HP BladeSystem family will allow businesses to deploy and manage Integrity or ProLiant servers in a single blade enclosure with a set of common management tools.

The BL870c builds on the strength of HP's first c-Class Integrity blade, the

BL860c, by offering twice the processing power and twice the memory capacity. It provides the choice of Microsoft Windows®, HP-UX 11i v2, HP-UX 11i v3, OpenVMS, RedHat or SuSE operating systems. Its large memory capacity makes the BL870c well-suited for high-performance computing applications. With the BL870c, businesses requiring the highest levels of availability and greater scalability can better streamline operational expenses to drive business growth.

Open Systems Technologies, an HP Platinum Certified solutions provider and systems integrator based in Grand Rapids, Mich., has successfully helped many organizations move business-critical

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Accelerate your core banking.



cal applications to an HP bladed environment.

“Many of our customers are looking for a high-performing UNIX server that also offers space and energy efficiency, as well as ease of management. Integrity blades are an ideal solution,” said Jim VanderMey, vice president, Technical Operations, Open Systems Technologies. “As products become denser and blade enclosures become pervasive, I foresee that a majority of the entry to the mid-tier UNIX servers will be based on blade technology. Organizations with certain business-critical applications will be able to take advan

tage of a bladed infrastructure with the new BL870c.”

HP Solution Blocks simplify deployment

HP Solution Blocks for Integrity server blades simplify the deployment of enterprise applications and optimize the use of the HP BladeSystem enclosure to save time and money. Each Solution Block includes combinations of Integrity blades, application software, HP storage and interconnect technology – all HP-approved based on best practices or testing.

Initial Solution Blocks available for Integrity blades include enterprise

resource planning (ERP), service-oriented architecture (SOA), application integration and product data management.

The Oracle® PeopleSoft Solution Block for PeopleSoft Enterprise 9.0 is one example. With this Solution Block, businesses have the option of configurations for basic, medium and high availability. They include combinations of Integrity BL860c, BL870c and ProLiant BL460c server blades, and a range of storage options. Using a high-performance, highly reliable and modular infrastructure, HP helps Oracle customers build long-term IT strategies that can dynamically change as the business environment evolves.

“The Oracle PeopleSoft Solution Block makes it easy for our customers to get their IT systems up and running quickly so they can focus on the most important aspect of their business – driving growth,” said Doris Wong, group vice president, PeopleSoft Enterprise at Oracle. “This is the latest way in which HP and Oracle are teaming to address today’s business challenges by enabling the synchronization of infrastructure, applications, services and business processes to help companies be successful.”

Effective and efficient application modernization

Transforming legacy applications to target IT architectures requires a sensible, methodical approach.

Steve Woods, Master Solutions Architect

Steve works in the HP consulting and integration, application modernization services practice and has been instrumental in the formulation of HP mainframe modernization methodologies. He previously worked as a cryptologist with the national security agency.

Transforming legacy applications seems daunting at the outset. With this in mind, it is important to move forward methodically.

How might legacy applications be obstacles to creating a world-class IT infrastructure?

Legacy systems tend to resist change. They drain resources and require hard work to keep up with changing needs. Eventually the legacy systems do not add much value. The more dynamic the marketplace, the greater is the need to be agile and respond quickly in transforming legacy applications.

To move away from a legacy design, is it first necessary to decompose that design? If so, how do you approach decomposing legacy applications?

Incremental modernization reduces risk,

and decomposition is the first step in implementing this incremental option. Legacy systems may contain many thousands of lines of source code. Just as a physician uses blood tests to diagnose a patient’s condition, source code tells us about complexity, level of transformation effort, code quality and interdependence of a legacy system. HP begins its decomposition by using source code tools to expedite the process. By doing so, we too are able to diagnose the condition of the legacy system and be more effective in completing a transformation.

What is your advice to CIOs in making this transformation?

Transforming legacy applications seems daunting at the outset. The existing configuration is large and complex. Nobody can figure out what to do. Many approaches to transformation appear risky. With this in mind, it is important to move forward methodically. Leaders need to assess their present applications with regard to size, complexity and functionality, and then understand the target architecture

options. If a particular application is meeting your needs, but the platform is not, a sensible approach is to re-host your existing legacy code. If the application is not agile and not meeting your needs, then you may explore other options. We aggressively seek opportunities to modernize the system by replacing code with agile architectural components. If this is possible, it is a big win.

What are some of the risks and best practices in using quantitative measures in legacy transformation?

Measurements are critical to decision making in planning and implementing a transformation. We begin with a series of questions: How much will it cost? How much code is there? How complex is it? Is there code to leverage? What percentage will be replaced by other architectural components? What is the size of the legacy application? Then we need to look at the target architectures, their expected benefits, cost savings and the overall economic impact. Such analysis helps to quantitatively measure

and assess options as we move forward. Our goal is to aim at reducing uncertainty, to provide a business justification. Often this involves measuring both tangible and intangible benefits.

In transforming IT infrastructure, you have said, “the past can transform the future.” How so?

Legacy systems have a story to tell. We rely on four sources of knowledge in shaping a story: present day application characteristics, historical application evolution, source code derived characteristics, and visually elicited knowledge from legacy stakeholders by using tools that employ color and patterns to visually depict the system. Present day, historical, and source code derived knowledge all intermingle. Suddenly, there is clarity in understanding how the system is constructed. With such complete knowledge, the past transforms the future by giving us context and comprehension in what is required to achieve our target.

Virtual hosted desktops

It's all about the TCO

By John Sami, HP Distinguished Technologist

In the past, most enterprises bought one or more physical servers for every application to preserve the autonomy of that application. And, because that is how most of IT was funded, this paradigm turned out to be economically unsound. Over time enterprises ended up with 1000's of physical servers, each of which was only about 20% utilized. With virtualization they could put several applications on a physical server each running in its own guest operating system and having a dedicated share (memory and CPU) of the physical server. Great idea and virtualization was adopted at a faster rate than originally predicted.

Why not just take some servers, add a hypervisor such as ESX from VMware, load a bunch of guest operating systems with each one running Windows XP and a set of applications and then connect users with a remote display protocol and Microsoft RDP? The client device could be a thin or fat client. Seemed like if you manage all the desktops centrally there would be some operational cost saving when new applications or Windows XP changes needed to be rolled out.

This use case was too big to be ignored and in April, 2006 VMware launched its Virtual Desktop Infrastructure program called VDI. Interesting enough, VMware did not at the time engineer a different product. Instead, they built an Eco-system of partners that filled out the solution with connection brokers (connects the user to the desktop) and image managers for sharing virtual system disks across virtual desktops. With server consolidation, a physical server might run 5-6 guest operating systems, each one with a different application. In a hosted virtual desktop solution many thousands of virtual desktops run on a handful of servers. Each desktop would

be the same configuration or maybe one of several configurations for thousands of users.

This remote PC concept is not new. Before virtualization became production ready, users could connect to a remote PC blade in the data center. HP offers a solution called "Consolidated Client Infrastructure" (CCI) that essentially uses this concept. Users with a thin client connect to a dedicated PC blade using a remote display protocol. The major difference is that with PC blades, users are assigned a full blade and thus have complete physical isolation. With this approach there are no issues with sharing the server I/O capabilities or issues of qualifying the application to run in a virtual environment.

The PC blade solution has helped blaze the trail for the virtual hosted desktop because it offers similar TCO and security advantage by centralizing the PC into the data center.

Different configurations for different users

A best practice in deploying hosted desktop systems is to make a variety of desktop configurations available. For example, there might be different configurations for tellers, advisors, and managers. Each configuration has the necessary applications for each user and, perhaps more importantly, does not have applications the user is not entitled to use. A "connection broker" grants and connects a user to a specific desktop configuration based on access policies. Of course, the connection broker needs to have a provisioned hosted desktop to connect with. Therefore, most connection brokers available today also provision the hosted desktop. In other words, they load the desktop operating system and the applications on the host-

ed PC. The job of provisioning desktops and making connections to them is synchronized so that when a user wants a desktop there is one available. When using a connection broker, the administrator just needs to have an idea of the user population and their roles. The administrator, for example, would specify 10 manager desktops, 50 teller desktops, and 30

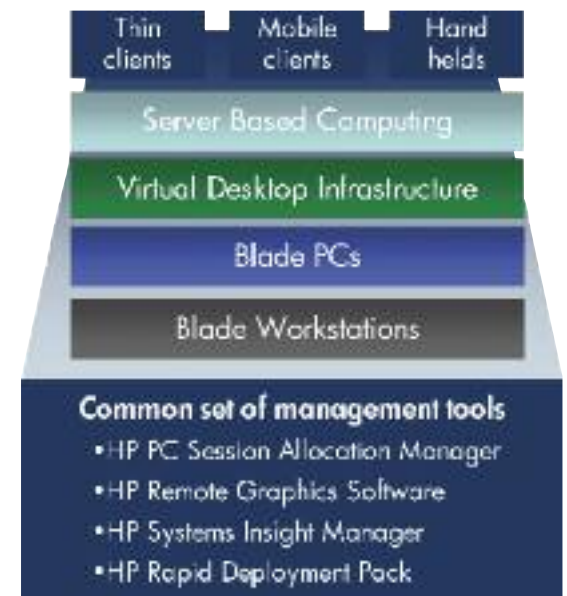
advisor desktops and the connection broker would do the rest and make sure that desktops are ready to go and govern the connections to ensure users are only connecting to their entitled applications.

The importance of shared images

In a virtual hosted desktop solution, the virtual system disks are the same for a specific desktop configuration. Provisioning these virtual desktops can take a long time and use considerable disk space. Emerging technologies for shared image management solves this problem. One of these is the HP Neoware Image manager. Another approach is to have one master desktop image and then stream the applications to it based on user entitlements.

Beyond virtual desktops—more virtual client technology

It turns out the virtual desktops are just one of several emerging technologies in the area of Virtual Clients or Remote Client computing. For many years companies have deployed Microsoft



Terminal services and some have added to the Citrix Presentation server. Industry analysts now call this "Presentation Virtualization" because the application runs on the server and the presentation is remoted to a thin or fat client using a remote display protocol such as RDP for Terminal Server or ICA for the Citrix Presentation server. This same remote display technique is used for the virtual hosted desktops but the difference is that with the virtual desktops each user has a full and isolated version of the operating system.

With Terminal services or Citrix presentation server the operating system is shared with all server users that have connected to the server. Consequently, performance could be affected if too many users are assigned to the same server. With hosted desktops, the key is to figure out how many virtual desktops can be provisioned onto a physical server. VMware has published test results of 26 heavy users and 42 light users on an HP ProLiant DL 385 G1 server with two

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Virtual Hosted Desktops (continued)

A best practice in deploying hosted desktop systems is to make a variety of desktop configurations available.

dual-core 2.2 GHz Opteron processors. The numbers will only get better. A user gets the entire desktop and the performance is not changed by other users that get connected to the same physical server.

In addition to presentation virtualization and virtual hosted desktops, another technology has emerged, call streaming (also called application virtualization). With streaming, the application is streamed to the client. The execution takes place on the client device not the server. After the application is streamed, it can run when the client is disconnected from the network. You might think that this is the same as downloading but there is a major difference.

With streaming, the application is still managed by the server and time bombs can be set to disable the application after a period of time—say 30 days. The configuration of the PC is not changed. The ability to receive a streamed application is managed by access policies. This is great for software license management. Another more significant value to streaming is that the application executes in an isolated environment on the client device. There is no worry that the application that has been streamed will have conflicts with anything else on the PC. If the PC owner has an older version of the application, it will not matter. There will not be any conflicts. This solution works well when the enterprise hires consultants and these consultant or con-

tingency workers bring their own notebooks or desktops. With streaming, the temporary workers can run the enterprise applications on their personal devices.

Yet another technology (which is also sometimes called ‘streaming’) is the virtual C: drive or diskless PC. In this case the operating system and the application are streamed. This is used in industries that must make sure the end user does not have the capability to store data on local storage. Both financial institutions and the healthcare industry have strict regulatory compliance requirements and must demonstrate that they have controls to prevent unauthorized copies of customers financial or health records.

Considerations in deploying virtual client solutions

First, performing a realistic cost analysis. The trap that many people fall into is to ask, “How many virtual clients can I get on a physical server and then calculate the cost of a traditional PC to a virtual PC?” When adding the cost of a portion of a server, the hypervisor, the guest OS, and the applications it is hard to understand the cost advantage of a virtual client over a traditional PC. Well, the value proposition is operational costs not capital costs, which are much harder to measure. The ease of updating desktops without desk side assistance or if using a desktop management solution the time it takes to roll out a mandatory

security update to Windows XP presents a significant difference. With a hosted solution the IT administrator only needs to create one new desktop template and provision it in the data center. Users will get the new desktop when they connect to the virtual desktop. Shared image technology can be used to reduce the provisioning time of the 1000’s of virtual desktops to just a few minutes. A cost analysis should focus heavily on the operational costs since the capital costs will be similar. In addition to reduced provisioning time, thin clients also use only a fraction of the power that is used by traditional desktops—posing a significant savings for large enterprises.

Secondly, the complete solution requires a connection manager, which makes the connection of an end user to a hosted desktop. This is done based on enterprise policy for end user entitlements. Engineers get the engineering desktop and marketers get the marketing desktop. The connection manager can also specify how to lock down the end user device to disable USB ports or local printing. Think of the Virtual desktop solution not as a PC alternative but rather a well-managed enterprise endpoint.

Thirdly, the ease of applying enterprise policies to virtual clients must be considered. If the true value of hosted desktops is operational, the enterprise should ask how their investment in managing traditional PCs applies to virtual PCs. Can

The virtual client technology shows tremendous promise for helping organizations lower their operating costs and demonstrating compliance to regulatory requirements.

the policies defined in tools such as HP configuration manager also apply to virtual PCs? What about streamed applications and diskless PC? Can a virtual disk be provisioned with HP CM or some other enterprise class tool? After all, policies are not associated with the device. Moving from a traditional PC to a hosted PC is a change in infrastructure, not IT policy management. Employee entitlements are based on job function not client hardware. Given that several styles (traditional PC, hosted, streamed, diskless PC) will co-exist at the same time, will a different tool be required to administer policies for each? If so, the promise of lower TCO may not come true.

Lastly, user segmentation needs to be considered. Enterprises attempt to divide their employees by client type and role. For example, they would say that 40% will have a traditional desktop PC, 30% hosted desktops, 20% will use Citrix Presentation server and 10% will get

their applications using the streaming technology. In reality, most users could use several styles. A user might have a fat client and run office applications locally that are distributed with a PC management tool. A client/server CRM application may be run by publishing the client side on presentation server, and a home grown business application that changes frequently may be streamed and then made available for disconnected use. A CAD application may be offered on a virtual desktop because it is rarely used and the license cost is high. With the hosted desktop approach only 10 licenses could support 50 people based on the number of concurrent users that need to be supported.

Moving forward

The virtual client technology shows tremendous promise for helping organizations lower their operating costs and demonstrating compliance to regulatory requirements. The initial excitement has been in the virtual hosting systems, but

the value proposition is actually delivered by policy based connection management and configuration management. A virtual client strategy should have a central point of administration as opposed to a tool for every vendor and delivery style. The ability to manage both physical desktops and virtual clients with the same policy will help enterprises migrate users across styles and optimize the delivery based on the end user's role.

As hypervisors become commodities and are basically in the server box it will be important for enterprises to keep operational policies at the business level and not the infrastructure level.

NYSE selects HP to bring speed to online stock trading system

The New York Stock Exchange (NYSE) has selected HP servers to improve the efficiency of its online stock trading system, the NYSE Hybrid MarketSM.

In a business environment where milliseconds matter, the NYSE Hybrid Market is relying on rack-based HP ProLiant DL585 servers, ProLiant BL685c server blades and Integrity NonStop servers to grow its business by verifying that its online trading transactions occur with the speed and accuracy customers expect.

"We're proud that the largest stock exchange in the world chose HP to improve the performance of its IT architecture," said Paul Miller, vice president, Enterprise Servers and Storage, HP. "HP technology is ideally suited to serve as the backbone for the NYSE Hybrid Mar-

ket's IT infrastructure, which routinely handles more than 500 million messages a day."

HP server technologies are helping the NYSE Hybrid Market adhere to the Securities and Exchange Commission-governed Regulation National Markets System, which is a series of initiatives designed to modernize and strengthen the national market system for equity securities.

HP ProLiant servers deliver the processing power required to manage daily trading volumes that peak or spike at any given time without any execution delays. The servers have reduced the average trade-execution turnaround time from seconds to milliseconds. In addition, HP technology allows

customers using the Hybrid Market to automatically trade up to one million shares in a single order—up from 1,099. That equals a potential 900-fold improvement in trade volume, which can help improve the NYSE's bottom line.

"During the past several years, the requirements of investors and securities companies have significantly changed," said Steve Rubinow, chief information officer, NYSE. "Although order commitment reliability is certainly paramount, users want a trading platform with flawless execution and transaction speed. HP is helping us deliver it all through these dependable server platforms."

In addition to assisting with its core trading infrastructure, which has been driven by NonStop servers for nearly 30 years,

HP has supplied the NYSE with HP StorageWorks XP12000 storage arrays to run the critical applications that keep the trading floor up and running. The arrays connect to the ProLiant DL585, BL685c and Integrity NonStop servers to verify that real-time data is always available.

HP also will use its expertise in Linux to help the NYSE deploy a more flexible and cost-effective operating system for application development, deployment and maintenance.

Mitigate Risk

Security, Operations and Governance

HP acquires SPI Dynamics

By Tari Schreider, CISM, SSCP

“The number of vulnerabilities to business-critical applications has gone up exponentially with the rise of web-based applications.”

—Jonathan Rende, HP’s Vice President of Quality Management Software Products.

HP acquired SPI Dynamics Inc., a leading provider of web application security assessment software and services, to further strengthen its leadership in IT quality management. This was a big event for SPI as well as for HP and the security market since WebInspect, QALnspect, DevInspect have already been integrated into HP (Mercury) Quality Center software, thus allowing customers to assess and identify security vulnerabil-

ities along the entire lifecycle of web applications. Customers can also use SPI Dynamics software to validate application security and quality after deployment to meet auditing and compliance requirements, such as Sarbanes-Oxley.

The number of vulnerabilities to business-critical applications has gone up exponentially with the rise of web-based

applications,” said Jonathan Rende, HP’s Vice President of Quality Management Software Products. (See why in related story by Caleb Sima, CTO and Founder of SPI Dynamics on page 11.) “Today, HP Software provides solutions that ensure that business applications run well. Now, with the addition of SPI Dynamics, we can make sure it is also secure.”

HP Information Security Service Management (ISSM) reference model

By Tari Schreider, CISM, SSCP

Today, organizations must comply with a myriad of legal and regulatory compliance requirements; however, they lack a cohesive, holistic security control framework or model. This lack of guidance often leads to misinterpretation of the requirements and over/under investing in asset safeguards. To address this lack of guidance, HP developed an ISSM Reference Model and associated consulting methodology to pragmatically and cost-effectively address compliance commensurate with the value of assets. In essence, ISSM is HP’s ITIL of security incorporating industry best practices and international standards ITILv3, CMMI, CobiT®v4, NIST, Basel II, ISO/IEC 20000 and ISO 27001.

The components of ISSM define an INFOSec program’s structure, interdependencies, and functionality resulting in a highly operationalized IT security controls and governance framework. The core of the HP ISSM Reference Model is its Common Control Schema, a method by which security controls have been defined by certain

properties (attributes) and normalized according to their contribution to manage and/or mitigate risk. These control attributes include the specification of Capability Maturity Levels (CMM), control governance, SLA/KPI metrics, enabling technologies, service management constructs, and many others. The “adjustable” control properties of the Common Control Schema ensure the proper alignment of security controls to an organization’s risk appetite. HP’s unique P5 Model of IT governance (e.g., People, Policy/ Procedure, Process, Products, and Proof) ensures that compensating controls are deployed in an objective and precise manner where governance “lives” at the control layer rather than an amorphously ill defined management layer or buried within ambiguous policies.

HP ISSM is comprised of the following seven (7) core components, which in their entirety form the foundation of an enterprise INFOSec program. HP ISSM components can be used individually, in various combinations, or in their entirety

depending on an organization’s INFOSec program maturity or investment level.

- 1) Risk Model – A Rapid Risk Assessment (RRA) process that captures an organization’s most likely threats, threat vectors, and threat targets—calculating their likelihood and projected impact. The resulting risk score is then compared to the organization’s available or potential controls inventory where control value scoring is used to determine the most appropriate combination of controls to address the determined risk.
- 2) INFOSec Framework – A conceptual organizational structure, which articulates the core Domains, Disciplines, and Elements of an INFOSec program. The Framework brings together disparate/multiple IT security standards and regulations by their respective common denominators in order to reduce the effort and cost of achieving compliance.
- 3) Controls Inventory & Compliance Reporting Engine – A repository of IT

and regulatory security controls and their associated attributes. Attributes include control priority context, attestation information, CMM level rating, etc. A powerful management engine calculates compliance gaps between an organization’s present and future state compensating controls in order to determine the level of adherence to standards and regulations. The engine also contains cross-mapping links between the baseline ISO 27001 standard and dozens of other industry and government specific security requirements.

- 4) Reference Guides – Authoritative guidance to provide detailed deployment knowledge for implementing compensating controls. Reference Guides are selected from leading industry and security standards bodies making them universally accepted by all auditing and regulatory entities. Each guide has been carefully researched for applicability to each compensating control and provides the depth of knowledge to be used in



Musings on web application security

By Caleb Sima, CTO & Founder – HP Spi Dynamics

To understand why web security is one of the hottest issues today, we need to go back in time and look at the history of security and specifically network security. Back in the old days of security, most of the networks and machines were all open and located directly on the Internet. Hacking was extremely easy and port scanning was the most popular method of finding machines and finding services. This became a huge problem so firewalls became the most popular solution. Shove a firewall in front of the networks and pull them off the Internet so that only allowed services could be accessible to the public. This worked great for a short amount of time.

The hackers adapted to this and started finding vulnerabilities in the services that were allowed such as email, ftp and web. This allowed them to bypass the firewall, exploit the service and gain access to the servers. The security community responded by creating IDS (Intrusion Detection Systems) to watch the traffic flowing through the firewall, and to identify these attacks. Companies figured out quickly though that an IDS system is like an alarm system and no one pays attention to them because attacks are so commonplace (Think of how often car alarms are ignored). Next, they created automated patch management solutions and IPS (Intrusion Prevention Systems) in order to actually stop or prevent attacks from occurring.

whole or part depending on the desired maturity (CMM) level of a compensating control.

- 5) Reference Maps – An abstraction view of compensating controls and their associated process flows to guide an organization in deploying an in-depth defense strategy. Reference Maps and process flows present logical associations between physical/logical security layers to guide an organization in formulating perimeter protection, infrastructure hardening, access control, and other asset protection strategies.
- 6) Control Templates – Technical specifications and standards that provide detailed guidance on the implementation of compensating controls. Control Templates ensure that ISO, CobiT, and NIST security standards are accurately patterned from their source as well as present CMM options, metrics, enabling technologies, and associated policies. The Control Templates also document each of the P5 Model governance attributes to ensure that controls are objectively deployed according to their CMM level.

7) INFOSec Knowledgebase – INFOSec programs require a centralized repository in order to facilitate the systematic organization and retrieval of security and compliance documents. SharePoint is ideally suited for the task of storing and managing all the associated INFOSec program policies, procedures, standards, diagrams, etc. Preloaded with substantive INFOSec program IP, organizations can jumpstart their asset protection initiatives.

The secret sauce in HP's ISSM Reference Model resides in the definition of 16,000 control attributes, which have been normalized in a manner allowing controls to be accurately aligned to an organization's risk posture. This provides an unparalleled enterprise view and security governance framework for service-level and operations-level agreements, and ensures the integrity and protection of information and assets through an effective IT-related risk management strategy. This approach reduces compliance costs, ensures that security controls address all enterprise risks, and helps achieve a best-in-class INFOSec program.

So here we are today with Firewalls, patch management and IPS systems along with complicated authentication and authorization systems, and yet hackers are continuing to break into systems. How?

The one area that security has not touched is the web application. System administrators and security people patch and watch the web server, but they typically do not have permission to look at the application which runs on that web server. Firewalls allow the traffic because it's a permitted port. IDS and IPS systems don't detect the attacks if they are not 'known issues' which are posted on BugTraq or other security lists.

The web application has become the easy path straight to the crown jewels for hackers. Every company has a website. Almost every company does their business through their web application and every website is typically developed, managed and updated by people who know nothing about security. As such, the website is the last layer of security and is the most vulnerable. Most web applications are trusted thus, if the hacker can figure out how to manipulate the web application, then they can also manipulate anything that the web application has access to— like the database, file system or—most frightening, the users of that web application. This brings us to the web security issue of the day: Cross-Site Scripting.

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Cross-site scripting for dummies

Cross-site scripting (also known as XSS or CSS) occurs when dynamically generated web pages display input that is not properly validated. This allows an attacker to embed malicious JavaScript code into the generated page and execute the script on the machine of any user that views that site. Cross-site scripting could potentially impact any site that allows users to enter data. This vulnerability is commonly seen on the following:

- Search engines that repeat back the search keyword that was entered.
- Error messages that repeat back the string that contained the error.
- Forms that are filled out where the values are later presented to the user.
- Web message boards that allow users to post their own messages.

areas on web sites are search engines and login forms.

Step 3. Once you have located a search engine or login form, enter “test” into the search field or login name and submit the request to the web server.

Step 4. Look for the web server to respond back with a page similar to:

1. “Your search for ‘test’ did not find any items”
2. “Your search for ‘test’ returned the following results”
3. “User ‘test’ is not valid”
4. “Invalid login ‘test’”:

If the word ‘test’ appears in the result page, then an entryway for cross-site scripting has been found.

Step 5. To test for cross-site scripting, input the string “<script>alert(‘hello’)</script>” without quotes as done with

attacker’s creativity. This simple problem has produced amazing exploits that range from an attacker being able to steal your search history to infecting your browser—capturing all keystrokes, recording entire browsing sessions and sending them to the attacker. In fact, for two consecutive years, SPI Dynamics presented at BlackHat about how hackers can build complete port scanners and automated web attack tools in the victims browser to scan internal networks and feed the data outside to the attacker. The hot topic now is combining these things into web app worms which propagate themselves using XSS and search engines. This form of exploitation has become so advanced that we now have technology that mutates the XSS worms so that they become completely undetectable. Now that little JavaScript popup box is starting to become a lot more frightening.

the first name field. When I went to the last stage of the application process what do you think happened?

- **ATMs:** This is theoretical, but many ATMs that use web based front ends may also be vulnerable. There is an ATM at the mall near my house that says ‘Welcome Caleb Sima’ when I swipe my credit card. I wonder what would happen if I rewrote the magnetic stripe to put JavaScript as my name instead?
- **Collaborative software:** A lot of software exists that allows you to present presentations online and to collaborate with multiple users remotely. Many of these are web based and allow any participant to answer questions or chat. You will find many XSS possibilities here. During a recent web-based presentation for a large enterprise (using their software), one of our presenters attempted to send JavaScript via the “ask a question” feature. It did not appear to work, but we found later that the moderator who was approving questions thought the software had been hacked because alert boxes kept popping up on his screen.

The web application has become the easy path straight to the crown jewels for hackers.

An attacker who uses cross-site scripting successfully can compromise confidential information, manipulate or steal cookies, create requests that can be mistaken for those of a valid user, or execute malicious code on the end user systems. XSS has been around for a very long time but never really became popular until the use of AJAX emerged and made the exploit payloads for XSS extremely dangerous.

Let’s view this security issue through the mindset of the attacker. It allows you to quickly understand how a hacker identifies the issue and how it is exploited, so let’s look at how you might find XSS in a web application.

Step 1. Open the web site in a browser.

Step 2. Browse the web site for areas that accept user input and will return back what you typed in. For example, the most common locations for these

“test” in Step 3. Submit the request to the server.

Step 6. If the server responds back with a popup box that says “hello”, then the web site is vulnerable to cross-site scripting.

Step 7. If Step 6 fails and the web site does not return a popup box, click the ‘View’ menu in IE, and select the ‘Source’ option. This will cause notepad to open with the HTML source of the page. In notepad, click the ‘Edit’ menu and choose ‘Find’. A dialog will appear that will ask you to ‘Find What’. Type the phrase “<script>alert(‘hello’)</script>” and click ‘Find Next’. If the text is found, then the web server is vulnerable to cross-site scripting.

Now obviously, XSS goes beyond just popping up an alert box on your browser window. The ability to act in the context of the web server and executing dynamic content is only limited by the

Impact of XSS on non-traditional web applications

Since almost everything is moving to a web front-end, this broadens the number of places where XSS can be exploited. For instance let’s look at some areas people overlook when they think about XSS.

- **Web based kiosks:** Most kiosks that you see in bookstores, grocery stores, train stations, hotels and airports have all become web based. This brings XSS to a whole new attack vector. For example, in a bookstore try inputting ‘<script>alert(‘hi’)</script>’ as a book name sometime. Or, I have also filled out an employee application on a terminal in a grocery store, and noticed that on the last page of the application I received a response that said ‘Thanks Caleb for your application’. I then filled out another application and input ‘<script>alert(‘hi’)</script>’ in

Conclusion

All of these examples merely demonstrate the ubiquity of web based solutions that can potentially be exploited in some way, especially if they are not designed and QA’d properly in the beginning. They also serve as a testimonial for why SPI Dynamics!



Regulatory compliance and document handling in financial services

By Joe Wagle

Since the late 1990s, the financial services industry has undergone a broad transformation as the result of increased competition, new regulations, new trading and communication systems, new processes and technologies, and evolving customer needs. In turn, these changes—along with the continued use of legacy processes and systems—have led the industry to conduct transactions and support customers across a variety of new and existing media. Such media include online access to services and products, phone banking, mobile banking, in person at branch offices, and through couriered and posted mail.

The reality of multiple banking channels has created overlapping, inefficient and redundant systems for processing and managing investment and financial transactions. While the technology used by financial services companies has grown more sophisticated in recent years, some transaction processes—and the records management supporting these processes—have remained largely paper-based. Although inefficient, this generally satisfied compliance mandates in the past, but is inadequate for meeting the current demands of industry regulations.

Today, increased sensitivity to privacy concerns, and the need to maintain a transparent trusted, and competitive market system have led to more stringent regulation of the financial services industry—particularly among the capital markets. Financial Services companies are now governed by an ever-growing body of complex regulations that are often difficult to interpret and understand. Billions of dollars in fines have been paid by financial services in the last few years, and the reputational damage is estimated to cost 10 to 20 times more.

Despite these stricter regulations, and because of the significant cost of comprehensive electronic document capture and archival, many financial services companies still use a combination of systems, some of which rely on non-compliant, paper-based records management. Furthermore, those companies that have already implemented a complete electronic records management solution often maintain disjointed silos of archival information that cannot be easily shared.

HP created the Compliant Document Capture solution which is a combination of HP hardware, software and services that helps enable companies to address three critical areas of concern:

1. Achieving regulatory compliance and maintaining a strong compliance posture;
2. Streamlining their workflows and increasing the efficiency and cost-effectiveness of processing transactions; and
3. Increasing staff productivity by helping them focus less on paperwork and processes, and more on building strong customer relationships.

To meet the regulatory compliance challenge, HP's Compliant Document Capture solution utilizes HP multi-function products and HP ScanJet devices to digitally capture paper documents, and HP Digital Sending and third-party software to automatically process, route and archive those documents. This helps provide archival and audit trails of all incoming and outgoing correspondence related to key processes, including new enrollments, securities trading and account maintenance. To address industry regulations governing privacy and data security, HP's integrated solutions encrypt sensitive client data and control access to that data through authentication. They also help secure devices and network connections, as well as the management tools needed to keep those security safeguards in place.

Further ensuring compliance and minimizing risk, HP's solution enables companies to respond more quickly to compliance-related information requests by streamlining the discovery and discovery request process.

In addition to achieving regulatory compliance, many companies in the financial services industry are also seeking ways to streamline their workflows and processes to reduce costs and improve efficiency. To that end, HP's Compliant Document Capture solution provides faster, more streamlined transaction and document processing that is less costly. The solution also offers easy-to-use tools that help enable frontline staff to easily digitize, route, process and retrieve important information and integrate the content into existing workflows—greatly improving product origination time while reducing costs.

By reducing the paper involved with transactions, automating and streamlining workflows, and providing easy access to important device functions, the HP Compliant Document Capture solution can help free up frontline staff so they can focus on the most critical element of the business—their customers.



eDiscovery

By Suzanne Prince

Financial Institutions today are subject to ever-increasing and seemingly unachievable regulatory mandates. These mandates neither help generate revenue nor reduce costs, but rather have become a cost of doing business in an increasingly complex world. One of the most challenging regulatory issues confronting financial services in the US is SEC 17a-4 which governs the retention, accessibility and reporting requirements for electronic communications—including email. SEC 17a-4 imposes specific requirements for the capture, indexing, storage, search and retrieval of electronic communications between the company and its trading partners and customers. Given that in January, 2008, sent email volumes around the world reached 87 billion per day, even the company's modest portion of that volume creates a

daunting compliance task. Most financial services enterprises have many terabytes of email data translating into billions of individual messages. And, since the regulations require long-term retention of emails, the capacity and corresponding cost cannot be addressed by deleting old messages.

HP's eDiscovery solution enables customers to archive, search and retrieve emails, files and databases. Using Reference Information Storage System (RISS), it provides a low-cost, scalable and robust solution for email archival and compliance. It's an all-in-one appliance with a unique, grid-enabled, SmartCell architecture—the latter provides the capability to intelligently distribute billions of objects across the Smart Storage Cells.

As an example of how HP's eDiscovery solution enhances compliances and dramatically reduces costs, the experience of the Dubai International Financial Centre (DIFC) provides a stunning illustration. DIFC aspires to become one of the world's leading financial centers—and, in fact, run their own stock exchange. They license financial institutions to operate in their 100-acre free zone. These firms, in turn, are eligible for such benefits as a zero tax rate on profits, 100% foreign ownership, no restrictions on foreign exchange or repatriation of capital, operational support, and business continuity services. Even with all those benefits, to be trusted in the international world of finance, DIFC needed to comply with the same level of legal and financial regulations as required in the US and other key markets—including a

world-class records management and archiving solution. eDiscovery allowed them to reduce their email retrieval staff from 30 people to 1 because of the advanced search capabilities and the instantaneous response—returning search results in less than 10 seconds regardless of the search size. DIFC gained a projected, cumulative 5-year net benefit of \$1.2 million with an ROI of 361% and a payback period of 15 months.

If we look at the current volume of sent emails— 87B per day, and the projected 27,000 petabytes of data that will be stored around the world by 2010, HP's eDiscovery's unlimited scalability and rapid search speeds will truly make compliance possible in this era of information overload.

eMail archiving and Exchange 2007 migration

By The Radicati Group, Inc.

As banks face the migration of messaging from Exchange 2000 to 2007, the prospect of moving the entire organization's mailbox content to a new platform is daunting—and carries a number of risks. For one, administrators must be careful not to lose important messages during migration. After all, the messaging system is home to extremely valuable content including documents, business contacts, intellectual property, and digital records. Secondly, it is imperative that employees maintain access to their inbox at all times which is not possible for most migrations. Every hour the messaging system is offline translates to a loss in productivity, lost sales and opportunities, and frustration.

With these risks in mind, some of the top challenges of email migration include:

Message retention – Since users have become so comfortable “living” in their email client, many treat the inbox as if it were a file cabinet. As a result, individual mailboxes hold project files, intellectual property, company records, contact information, and other valuable assets which can't be purged. Not only is it essential to maintain the messages through the migration for productivity and legal reasons, but also to maintain

them due to government and industry regulations.

Storage – In a typical migration, hundreds of gigabytes of mailbox content is stored in the original messaging system. Most migration tools involve a period of co-existence where copies of mailbox content exist on both the original and target email systems. Unfortunately, this approach is slow and demands a great deal of both storage and IT resources which is expensive and often impractical.

PST files – Aside from mailbox content, many users maintain personal PST files to retain old messages which are stored on local or networked disc drives. These files are usually large, unmanaged, and non-compliant. An ideal migration project would eliminate the need for creating PST files and free up the valuable infrastructure resources they consume.

Email migrations are complex and risky on their own, so it may seem counter-intuitive to introduce another new technology into the email environment prior to the migration project. However, email archiving solutions, such as Reference Information Storage System (RISS) for Messaging from HP, can significantly

ease email migration and ongoing messaging operations.

The primary way archiving solutions help is by drastically reducing the size of the original mail store so only a fraction of the data needs to be transferred to the target environment. This is achieved by the use of single instancing technology which removes duplicate messaging from the mail stores. This greatly simplifies the migration process resulting in faster deployments and major cost savings.

Depending on how aggressively customers archive, RISS for Messaging can reduce the data to be migrated by as much as 80%. RISS “mines” messages out of the Exchange Server mail store based on customized policies. These policies are flexible and can be based on a variety of factors such as the age or size of messages. Of course all messages can be tagged for archival if desired. A “stub” is left behind in the inbox so users can access archived messages with a standard double-click. Suddenly, the most challenging aspect of migration is no longer much of a challenge.

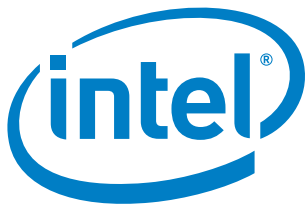
The RISS for Messaging's PST Importer tool allows administrators to import the

content of PST files into the RISS appliance for searching and archiving. In addition, selective archiving can be performed on PST files to place “tombstones” inside PST files in place of messages and attachments, allowing the company to reclaim valuable storage space.

RISS for Messaging can be implemented as compliance archiving where all messages sent and received are archived or with selective archiving where it would set archiving policies, and RISS mines mailboxes and messages that meet the archive policies and sends them to the RISS archive.

The RISS technology is a completely integrated appliance (HW + SW + services), making it the easiest archiving solution to implement. And... it uses HP's SmartCell Storage Grid system which allows for virtually unlimited scalability. It also comes with an advanced Web search tool that provides fast access to archived records. Since message retrieval is so fast and simple, end-users can retrieve messages themselves.

Not only does RISS speed up Exchange 2007 migration, it is optimized for eDiscovery.



Accelerate your trading.





HP beefs up document automation with acquisition of Exstream Software

By Patsy Koetting

Exstream's VDP solution has demonstrated the ability to get communications to market as much as 85 percent faster.

HP has acquired Exstream Software, a privately-held leading provider of enterprise software that streamlines the creation and delivery of personalized documents and other communications materials. Exstream's technology (Variable Data Publishing or VDP) is a system of enterprise software and printing infrastructure that enables financial institutions to increase sales productivity by designing, managing, and publishing highly customized print and online documents, based on business rules and information about a specific customer. Timeliness, accuracy and relevance are key—and translate into improved

customer satisfaction and loyalty as well as higher response rates. These in turn translate into higher returns on investment and increased profits.

"Document management processes pervade all areas of the enterprise segment," says Bruce Dahlgren, Senior VP in HP's Printing & Imaging Group. "As an example, banks offer both online and paper statements for their customers' convenience; financial services firms provide personalized portfolio displays on account literature; call center representatives populate Web forms based on customer interactions."

Ranked among the world's fastest growing technology companies, Exstream's VDP solution has demonstrated the ability to get communications to market as much as 85 percent faster, reducing document production costs up to 80 percent and as much as tripling customer response. For one large HP customer, VDP has the potential to dramatically reduce the cost of printing and storing the approximately 180 different brochures available in every store while also increasing offer uptake via relevant personalization.

HP helps businesses defend against malicious web attacks with new application security offerings

HP recently announced major updates to its application security software as well as a new software-as-a-service offering to help businesses reduce the risk of security breaches due to hacker attacks and safeguard against theft of sensitive customer information.

The new release of HP Application Security Center helps organizations discover, fix and prevent security vulnerabilities in their web applications. New features in the software help bridge the gaps that exist among development, quality assurance, operations and security teams within an IT organization.

This lifecycle approach helps companies comply with government and industry regulations, such as the Federal Information Security Management Act, the Health Insurance Portability and Accountability Act, the Payment Card Industry Data Security Standard, and the European Union Directive on Privacy and Electronic Communications.

"While customer-facing applications may be the lifeblood of a business, if they are not secured, they can provide an open door for hackers to a company's most sensitive data," said Joseph

Feiman, vice president and Gartner fellow, Gartner. "Organizations must not only find security vulnerabilities in their applications, they must fix them and be vigilant about prevention throughout the application lifecycle, from requirements definition, development and testing, through production."

In a recent survey of 1,000 IT professionals worldwide, 80 percent said that responsibility for application security falls to their security or operations teams, while less than 27 percent said that their development or quality assurance teams share the responsibility.¹

"Technology underpins our entire business, and our IT organization strives to deliver predictable outcomes," said Christopher Rence, chief information officer and vice president, Fair Isaac Corporation. "One of the solutions we rely upon to do this is HP Application Security Center, which provides a comprehensive capability for testing, remediation and prevention throughout our development lifecycle."

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According to the Web Application Security Consortium, an international group of application security experts and industry practitioners, more than 40 percent of web hacking incidents are aimed at stealing personal information. Such "personal records" are easily traded on the Internet, which makes them the easiest virtual commodity to exchange for money.²

Customer adoption

Since the acquisition of SPI Dynamics in 2007, HP has increased its investment in research, product enhancements and new services in the application security area, boosting customer adoption. As a result, five of the top six banks, three of the top four food market companies, four of the top six insurance companies, and five of the top seven public companies in the world, as ranked by the Forbes Global 2000,³ use HP Application Security Center to protect their web applications from security threats.

"As a mobile data services provider, our clients require applications that are ready when needed, highly available and secure," said Jes Beirholm, director of information security at Denmark-based End2End VAS ApS. "HP Application Security Center helps us stay ahead of potential security issues so we can provide our customers thoroughly tested services and applications. It also helps us deliver on time by reducing our security testing time from a week to one hour."

New research helps businesses stay ahead of hacker threats.

To help organizations stay ahead of the ever-changing security threats hackers

invent every day, the HP Web Security Research Group, which includes many renowned experts in the security field, has added and updated checks in HP Application Security Center for rich Internet applications, including critical vulnerabilities in Apache and MySpace plug-ins.

The new security checks are automatically updated for existing customers within 24 hours. In addition, the group researched new security issues for Web 2.0 technologies, including Asynchronous JavaScript™ and XML (AJAX), Adobe® Flash and Microsoft® Silverlight™.

Major product updates boost lifecycle approach to application security.

HP Application Security Center includes HP Assessment Management Platform as the foundation of the solution, with HP DevInspect for developers, HP QAInspect for quality assurance teams and HP WebInspect for operations and security experts. This allows customers to successfully find, fix and prevent security vulnerabilities. Enhancements to HP Application Security Center increase efficiency for these teams and help them integrate these security practices into their existing application lifecycle processes.

- HP DevInspect provides improved hybrid analysis that combines static and dynamic analysis to help find the true vulnerabilities. Remediation efforts can then be focused on the highest risk security defects. It provides a clear path for developers to build secure code within their integrated development environments. Support is

available for Microsoft Visual Studio® 2008, Visual Studio 2005 and Eclipse.

- HP QAInspect includes the first advanced security defect management capability integrated with market-leading HP Quality Center software. With defect staging and consolidation capabilities, application teams can filter, prioritize and assign defects based on risk to the business. This makes security defect information available to the whole application lifecycle team, including development, quality assurance, operations and security. Security problems are then detected and fixed more rapidly.
- HP WebInspect has been enhanced with faster runtimes and improved scanning accuracy for the security vulnerabilities that hackers most frequently exploit. These include cross-site scripting and structured query language (SQL) injection. This helps IT operations and security teams more efficiently find and fix the security defects that matter.

New software-as-a-service offering

HP Assessment Management Platform, the foundation of HP Application Security Center, will be offered through HP Software-as-a-Service (SaaS). Customers can quickly and cost-effectively centralize all of their web application security assessment programs into a complete solution maintained and managed by HP SaaS.

"Hacker attacks are a critical concern for IT organizations of all sizes. Now customers can get up and running quickly and involve the right teams to

minimize this risk," said Jonathan Rende, vice president of products, Software, HP. "HP is helping customers address their biggest application security challenges with new software-as-a-service offerings, product enhancements and research breakthroughs from our security experts."

HP also provides turnkey web application security assessment and penetration testing services performed by application security experts. These services use the HP SaaS offering to accelerate the assessment of an application's vulnerabilities and help customers reduce and manage risks associated with web applications that affect their business.

Availability

Enhancements to HP Application Security Center are available today. The new services are planned to be available in August.

HP Application Security Center is part of the HP Secure Advantage portfolio, which helps organizations improve protection of data and resources while validating regulatory compliance across their entire infrastructure.

To learn more, download a whitepaper on preventing malicious web attacks at www.hp.com/go/stophackers.

¹Vanson Bourne, Survey, May 2008.

²Web Application Security Consortium, "The Web Hacking Incidents Database 2007 Annual Report," February 2008.

³Forbes, "The Global 2000," April 2008.

Revenue Growth

Helping customers turn challenges into growth

By Steven McLaughlin, general manager of SunGard's Phase3 solution

One of the biggest challenges currently facing the middle and back offices is the significant and consistent increases in trade volumes and customer holdings.

Financial services firms continually need to create new products in order to remain competitive. These products often result in a need to process large volumes of data in very tight timeframes. Other firms are faced with large spikes in volumes due to market activity or new business opportunities. In today's competitive environment, these volumes and market spikes must be processed without event and within aggressive levels of service. Yet even the biggest firms, which typically have the most resources to solve such a problem, are feeling the strain.

Phase3's Facilities Management (FM) customers, who use dedicated servers that are owned and run by SunGard, include such tier-one firms. They are processing hundreds of thousands or even millions of trades that their clients send them via file transfer. They rely on Phase3 to handle not only those bursts of activity but also the batch processing for management reporting and regulatory reporting. They need reliable, accurate and fast service.

Phase3 has been at the forefront of developing ideas to help customers manage this volume growth. A real-time, order-to-settlement global securities processing solution for retail and institutional broker-dealers, ECNs and correspondent clearing firms, Phase3

helps organizations automate securities processing, which helps reduce the delays and errors associated with manual interventions and efficiently accommodate large trade volumes. Phase3 also assists customers in consolidating their records by helping them to process all security types on a single platform and using a single database.

Phase3 is part of SunGard's Brokerage & Clearance business, which supports the middle- and back-office functions for trade processing, clearance and settlement, data management, tax reporting and accounting. The Brokerage & Clearance business helps broker dealers, banks, futures commission merchants and asset managers streamline operations, control risk and manage cost.

Meeting the Challenges

Our customers have not hesitated to voice their concerns about these trends. They are looking for more processing power and improved performance. Through our partnership with HP, we have begun to help our customers solve these problems.

When the contract of one of our FM customers came up for renewal earlier this year, it issued us with several challenges:

- double capacity over the next five years
- provide a greater ability to increase capacity to support new products and migrating product volumes

- provide a greater ability to increase capacity to support new products and migrating product volumes from legacy systems

This customer, a very large diversified financial services firm, uses Phase3 for its brokerage business, which already has an extremely large base of customer positions. Therefore, room for growth was also critical.

With these requirements in mind, our team at Phase3 looked at the latest platform from HP: the NonStop Itanium platform.

HP had made a number of promises about the new platform: it would provide better availability, more power to meet demanding OLTP and batch Service Levels, and a greater processing capacity to support a customer's growing transaction volumes while remaining on a single production node.

We were delighted to find that NonStop Itanium was twice as fast as the platform that we currently use - with just a partial configuration. That result contributed to our customer's decision to extend its contract with SunGard.

The migration for both Phase3 and the firm was pain-free. We didn't have to make any material modifications to Phase3 in order to migrate our software onto the platform. More importantly, it took less than three months from the installation of the hardware to live production, and the implementation was completed nearly one month ahead of

schedule. The conversion itself took one weekend and was without incident.

Three weeks after going live, the customer has already sent us numerous positive comments, including a note that senior management is "extremely pleased."

Helping Our Customers Grow

The new platform also helps us better serve firms with significant trade volumes. One existing customer, a correspondent clearing firm, already has trade volumes nearing one million trades per day and requires top performance levels.

Again, the Nonstop Itanium platform seemed to be the answer. But first we ran the Phase3 system on NonStop Itanium for about six weeks in HP's Cupertino, California data center. Not only could the platform process five million trades per day within the Service Level requirements, it could handle 10 million trades within minor exception to the SLA. In addition, we saw 49 percent savings in batch run time and a 300 percent gain in trade throughput.

By upgrading to Phase3 and the Non-Stop Itanium platform, our customer will be able to leverage a high performance and scalable platform that can be economically configured to meet future business demands. At the same time, it can offer more appealing pricing to its clients and therefore attract new business.

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Helping Customers Turn Challenges Into Growth (continued)

Phase3's migration to the HP Itanium platform is also helping us attract new business, including an institutional equity firm that handles large trade volumes. This is a major opportunity, and the combination of HP's technology with Phase3 puts us in a position to be extremely competitive.

Trust and Experience

We know that we can depend on HP because the product works as advertised. HP consistently hits its performance metrics, which means that we don't have to benchmark minor system upgrades in order to understand the performance impact. Moreover, we don't have to modify our software for a system upgrade, which is rare nowadays.

In addition, both our team and HP's have decades of experience on the systems. They know our applications and how they integrate with HP technology. These experts can fine-tune the HP platform for optimal integration with Phase3. That means that our customers get the full advantage of our offering.

It also helps us maximize our own efficiency. If we hadn't been able to partner with a vendor like HP, we might have had to make substantial modifica-

tions or even re-architect our system. Instead, we were able to leverage the NonStop Itanium platform to retain top-tier customers and compete for new business. In fact, it will benefit all of our customers as we migrate to this platform over time.

NonStop Itanium also helps Phase3's operations. We believe that our overall total cost of ownership will be reduced as result of the new platform and our customers' increased volumes.

In addition, the growth potential of the system should allow us to stay on it for years to come, which means that our customers won't have to make any major system migrations.

Throughout SunGard's 25-year partnership with HP, we have enjoyed access to the latest technology and knowledge, which has often been a significant factor in closing deals with new and existing customers. HP's NonStop Itanium platform is no exception. With trade vol-

umes rising and customer balances and positions increasing throughout the securities industry, the platform's performance capabilities have helped us retain existing customers and provide a technology platform for years to come.

UNDERSTAND YOUR CLIENTS AND YOUR EXPOSURE

Relying on Stream, SunGard's single source solution helps customers create a complete view of their clients' activities, making it easier to improve service and identify new business opportunities. At the same time, it helps firms to assess their enterprise-wide exposure and generate more timely and accurate risk analysis. By using a single source solution to provide a single data stream to downstream applications, firms can save costs, streamline operations and reduce internal points of failure.

Contact SunGard at 800.825.2518 or getinfo@sungard.com to learn more.

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HP software portfolio expands through acquisitions targeting “optimal business outcomes”

By Cecilia Gunning

While a significant player for almost 20 years in the area of enterprise management software, HP, through a series of aggressive acquisitions, aims to round out its software portfolio to help enterprise customers extract more value from people, infrastructure, applications and information.

Several key trends over the past 20 years have fundamentally changed what IT people must do to ensure the quality, performance, availability and security of their applications, and this is especially true for IT in financial services enterprises.

With distributed computing taking off in the '80s, the sheer number of computers to be managed rapidly increased, along with the number of network devices upon which applications depend.

Just within the past decade, the Web has added dimensions of complexity unimaginable a few years ago. Now, the most important end-users are customers.

In addition, greater complexity is changing the nature of investment decisions IT must make to craft the best project portfolio. The stakes are higher, with many businesses tying corporate strategy to the successful deployment of new information systems. The resulting data now requires unprecedented levels of scrutiny to manage for regulatory compliance and business advantage.

In the financial industry, due to strict requirements for security, speed and compliance, the need for effective management of IT investments, services and data is particularly acute.

To give IT teams the tools to manage all of these IT service dependencies, enterprise management software for distributed computing was born in the late '80s and has evolved ever since. HP made a name for itself in this area with HP OpenView, first focusing on networks, and then systems and applications.

By the mid-to late-'90s, HP joined other noteworthy vendors to back IT Service Management (ITSM), a revolutionary approach to managing IT services rooted with the vendor-neutral Information Technology Infrastructure Library or ITIL. ITSM aims to redefine the IT organization from a cost-centric overseer of computing infrastructure to a profit-centric provider of business services.

This transition laid the groundwork for HP Software's latest evolution, which HP refers to as building and delivering software to help optimize business outcomes.

According to Tom Hogan, Senior Vice President for HP Software, “CIOs are determined to run IT more like a business, to break down the traditional silos within IT, and most important, to deliver the results that the business is looking for.”

HP sees the importance of IT to financial institutions as just one part of a major trend in business today: the shift from IT technology to business services. Says Hogan, “Technology no longer merely supports the business. For most companies, it has become the business.”

The HP Software Division is HP's response to that paradigm shift. Its mandate is to assemble the solutions, people, processes and enabling services to help IT organizations become high-performing strategic partners to the business. Or, to use HP terminology, to “extract high value from people, infrastructure, applications and information.”

Toward that end, HP Software has made acquisitions over the last few years, including Mercury, the second largest acquisition in HP's history. Other acquisitions also brought Peregrine, Opsware, ApplQ and Knightsbridge into the portfolio, as well as software components from Tandem and Compaq. As a result, according to IDC, HP Software has now

become the sixth-largest software business in terms of sales, which topped \$2 billion in 2007.

According to Hogan, as a result of the acquisitions, “HP Software is equipped to help businesses around the world align IT efforts with business goals, improve efficiency through automation, raise service quality, increase speed and agility, and reduce risk.”

How various vendors describe and categorize enterprise management software evolves constantly and seldom with consistency from company to company. HP divides the portfolio into two major categories: business technology optimization (BTO) and business information optimization (BIO).

BTO solutions

BTO solutions help financial institutions make sure that every dollar invested in IT, every resource allocated, and every application or service in development or production meets business goals. HP's strategy is to combine the capabilities of the software product portfolio with the expertise of the HP Services organization to support key initiatives that drive business results. HP has targeted 4 initiatives of relevance to large financial institutions:

- Business and IT alignment: Prioritizing IT efforts according to business requirements, delivering value to the business and making sure that value is recognized
- Service management: Applying best practices for IT service management, change, configuration and release management, and business service management to make sure business services meet service-level agreements
- Application quality management: Efficiently and cost-effectively managing requirements, testing applications in development and monitoring applications in production to make sure applications deliver end users value

- Data center transformation: Consolidating infrastructure, applications and management technology and automating processes to reduce capital and operational expenditures

The company links these strategic initiatives to underlying IT initiatives—portfolio and financial management, ITSM, application project deployments and upgrades, data center consolidation, and others—that are designed to enable IT managers to follow strategic mandates and optimize within domains.

BIO solutions

The second category—also buttressed by recent acquisitions—targets the need to manage and utilize for regulatory compliance and business advantage the terabytes of structured and unstructured information that flow through an enterprise. HP Software BIO solutions support both information management and business intelligence:

- Information management: Protecting vital financial data against disaster, ensuring business continuity and building a cost-effective archiving infrastructure to mitigate the business risk of legal discovery
- Business intelligence: Economically capitalizing on enterprise information to drive revenue and abate risk

HP is working to fulfill their mission of optimizing business outcomes by bringing well respected solutions under the HP brand, capitalizing on the talent and technology within HP and beyond, working to innovate across its product line, strengthening integration within its portfolio and with third-party offerings.



Next-generation core banking solutions from HP and Oracle

Oracle® FLEXCUBE® is a comprehensive banking product suite that allows financial institutions to standardize, optimize and transform their processes. It's ideal for retail, consumer, corporate, investment and Internet banking, as well as consumer lending, asset management and investor servicing applications.

FLEXCUBE helps financial institutions respond to market dynamics rapidly, defining and tracking processes while facilitating compliance. It's built on open architecture and runs on industry-standard HP servers, offering dramatic cost reductions over legacy mainframe infrastructure along with increased flexibility.

FLEXCUBE delivers the most comprehensive banking functionality of any back-office solution, including front, middle and back-office functionality for retail and corporate banking. From accounts, loans, trade and cash management to foreign exchange, money markets and automated clearing house (ACH), customers have deployed FLEXCUBE to meet a diverse set of needs, from individual departments to multi-country, multi-entity deployments.

More than 40 percent of FLEXCUBE customers have chosen HP as their platform. Because FLEXCUBE runs on lower-cost, industry-standard servers,

leveraging open standards and Oracle 10g across all modules, banks can reduce costs as much as 90 percent over mainframe systems (e.g., Shinsei Bank). It delivers proven high performance for collective transaction loads of 3,000 branches and 20 million customer accounts, with no performance bottlenecks.

FLEXCUBE enables effective limits and exposure tracking; allowing banks to take a unified customer view, including tracking multi-entity corporate clients. The ability to integrate with third-party risk-management applications allows a consolidated view of risk exposure across the enterprise.

Improved customer intimacy

Banks can use FLEXCUBE to create customized products for micro segments within their customer bases and deliver products and services across any delivery channel, including branches, automated teller machines (ATMs), point of sale (POS), debit cards, call centers and the Internet.

With time-tested and proven implementation capability, banks choosing FLEXCUBE can rely on HP and i-flex® to provide cost-effective, risk-mitigated, on-time deployment. Leveraging their deployments, banks have achieved

rapid time-to-market, launching configured products being in the least possible time.

Low risk

Combined expertise, leading technology, and certified, high-quality implementation methodologies allow rapid time-to-implementation and reduced project risk. FLEXCUBE can be procured on a functionality needed basis and quickly integrated with existing applications.

Once the system is up and running, HP, along with partners i-flex and Oracle, verify that banks have dedicated support in virtually any geographic location. These three global service organizations offer customers a full range of consulting and implementation services.

Integrated core system

The FLEXCUBE core system lets banks consolidate all of their systems, for greater efficiency and cost savings. This capability benefits, for example, banks that need to replace multiple legacy core systems acquired as a result of merger activity, and firms that find themselves running many different versions of their core systems due to country adaptations.

FLEXCUBE is service-oriented architecture (SOA)-enabled, allowing coexistence with the bank's established solution architecture and leveraged enterprise assets. It can be deployed centrally as a single instance, or as a number of instances, typically by geography, language, etc., or as a combination of centralized and decentralized deployments, providing the benefits of standardized product definition, bank-wide general ledger consolidation, and data consistency.

Major IT operational savings

The HP Adaptive Infrastructure portfolio helps customers evolve their data centers from high-cost silos to low-cost, pooled assets, while establishing IT as a valued service provider for meeting business needs. HP helps customers create next-generation data centers that allow automated 24/7 lights-out computing, helping customers create a roadmap that aligns data center projects to business priorities.

HP takes a modular, standardized approach. We offer engagement flexibility ranging from shipping industry-leading products directly, to helping our customers design and implement next-generation data center environments, to managing or outsourcing part or all of their infrastructure.

HP banking innovation center

Transforming branch banking

Retail branch banking has come full circle. With most banks now providing sophisticated online transaction capabilities, managers are realizing that the retail branch still has significant value as a primary sales channel. Indeed, customer visits comprise ideal opportunities to introduce new products and services that offer significant value.

Transforming branches from a transaction orientation to an information and new product sales orientation requires that they become much more customer centric. The HP Banking Innovation Center is helping banks achieve this goal. The Banking Innovation Center focuses on four key transformation themes: 1. customer experience, 2. bank staff experience, 3. branch efficiency, and 4. infrastructure as the enabler. There are three centers currently operating under the program, in Palo Alto, Milan and Singapore.

The Banking Innovation Center was created to encourage close collaboration between HP Labs and our retail bank customers—the customer presents a specific business problem, along with its attendant requirements and constraints. When needed, HP works with industry leading independent software vendor (ISV) partners to provide the technology and capabilities to develop effective solutions. The approach is flexible and highly customer centric.

How the Banking Innovation Center works

There are two elements comprising the Banking Innovation Center program. One is the HP Branch Transformation program, which focuses on refreshing the hardware and technology in the branch environment. This includes procuring and configuring the systems down to the individual desktops, staging the equipment, getting it to the site, installing it, testing it, and providing ongoing support services.

Branch Transformation program services are fully scalable. In one recent project, for example, HP transformed 200 branches within a single weekend after one of our customers acquired another bank. The branches closed on Friday under the old bank and opened on the following Monday morning under the new owner, with all the relevant technology and systems connected and ready to go.

The other element is “branch innovation,” which relates to evolving customer service delivery needs in retail banking. HP offers a breadth and depth of products and services that are unmatched in this area, including computers and PCs, servers and blades, networking—all of the infrastructure and services needed to support retail banking as an out-sourced business.

Key customer challenges

The Banking Innovation Center shows how HP’s innovative technologies, products and solutions can help solve our retail bank customers’ business problems, rather than simply fill a generic need for printing, servers or desktop PCs. Through the Banking Innovation Center, HP can apply broad technological solutions to business problems.

The process begins with asking basic questions: What is the customer’s experience? What happens when a customer walks into a given branch? What is the staff experience? What are their challenges when interacting with customers? The Banking Innovation Centers look at both process efficiency—how can transactions, loans and new accounts become more efficient—and infrastructure efficiency, whether the infrastructure is efficient and cost effective. Then we explore specific scenarios to determine which technologies might be applied to resolve specific issues.

One of the primary areas of focus is helping banks examine what happens when a customer walks into a branch. The first step is identifying that customer, i.e., performing an authentication process: Who are they? Are they who they say they are? The second step is determining the reason for the visit. Is it to conduct a transaction? To seek account servicing? Or is the customer seeking advice regarding loans, debt consolidation, or perhaps investment products?

Technology can help optimize these processes. For example, the Banking Innovation Center showcases new technologies for identifying customers when they enter the branch, through a radio frequency identification (RFID) chip embedded in the customer’s credit or debit card, or using near field communication with the customer’s cell phone. If it’s a VIP customer, the relationship banker can be notified that an important customer has just entered the branch, and even receiving a profile of that customer on his or her desktop before greeting the customer.

Teller-assisted self service

Another area of focus is improving transactional throughput via teller-assisted self service. The Banking Innovation Center has a prototype system that’s analogous to self check-in at the airport. The customer initiates the transaction, and one employee can serve multiple customers with, say, cashier’s checks or cash withdrawals, or accepting funds for remittance. A single teller can help multiple customers in parallel, rather than one-at-a-time, and the employee can also identify and respond to selling opportunities.

For each of the basic questions about the customer and employee experience and the challenges of interacting with customers, the Innovation Center has devel-

oped specific response initiatives and observed how they impact the customer’s experience. Hence, the bank can use these results to implement new processes in their branches without costly trial and error.

Remote advisor

Certain branch locations, particularly those that are geographically remote, lack access to specialists, e.g., investment advisors. The Banking Innovation Center is equipped with remote advisor capability to demonstrate how customers can interact with a virtual advisor via high quality video and audio connection. Bank customers can connect with the remote advisor, who can then share information on the branch terminal.

What’s next?

The Banking Innovation Centers were specifically conceived as labs, where HP experts and customers can collaborate to tackle critical business issues that can potentially improve their businesses. “What we’re really trying to do is show how the technology can positively impact the retail banking business across a broad range of areas,” says Gordon Wiegand, Branch Solutions Manager. “The lab experience is wholly driven by HP banking customers’ needs, and by HP’s ability to respond to them. Some of the interesting solution areas currently under consideration include paperless branches, account opening, and multimedia kiosks for virtual banking.”

Engaging the Banking Innovation Center

For additional information on engaging the Banking Innovation Center, contact your HP representatives.



From transactions to sales:

The Changing Role of the Branch

By Andrew Matuszeski

Ten years ago, the future of the retail bank branch was in question. The Gramm-Leach-Bliley act was in the works, and bankers were anticipating a wave of competition from insurance and brokerage firms with lower cost business models. Technology and the internet were threatening to make branches irrelevant, it seemed. ATM use was exploding, and call centers were adding capacity. Every bank was scrambling to establish internet banking.

So what happened? Human nature happened. It turns out, people prefer to make important financial decisions face to face. Checking a balance is not an important financial decision, so most of us have changed our behavior for convenience sake. We use the internet, ATM, call center, or mobile phone for this kind of transaction. But to select and open a new account, most people still want to deal with a human being. And that is why most bankers report that the importance of the branch network is as key today as it was 10 years ago.

But the role has clearly shifted. In the past, branch strategy focused on delivering transactions efficiently. With routine transaction flows shifting to alternative channels, the branch is rapidly becoming a sales center. This changes everything. Some of the changes are obvious. Signage, lighting, and floor layouts have changed. But some of the less obvious changes are just as important: what kind of people are being hired, real estate selection, and of course, how technology is being used.

As you might expect, HP is working with many of the top banks around the world to help shape the role of technology in the sales-focused branch. We have learned a few things. Development focus includes such areas as account opening (application forms; signature card, AML ID Checks, MICR starter checks, custom welcome kits, etc.); dispute resolution, compliance forms, remote expert, and document watermarking.

Lesson #1: Automate paperwork so the frontline staff can focus on the customer.

Many banks are aggressively pursuing this path, and showing great potential returns such as with electronic statements. Yet, they still move paper through millions of truck trips each year with manual sorting and routing of bags. That represents cost, process latency, lost and misrouted items, poor process visibility, access control issues, and even potential fraud risk. Much of that paperwork can be scanned in the branch, and routed to the operations center in near-real time.

Image-enabled transactions shift low-value paperwork burden onto technology and/or the back office staff. Paperwork skills become less important, which allows the bank to hire people with relationship skills. HP is developing a comprehensive suite of solutions to automate specific frontline banking transactions such as Account Opening, Dispute Resolution, Compliance Forms Processing, Financial Planning Reports, Remote Expert, and Document Watermarking.

Lesson #2: Color is coming to the branch

Every bank prints brochures and signage in color because studies show that well designed color documents have greater influence. This approach to signage and collateral leaves every bank with a tough choice. Including specific product details, like interest rates, clearly add important information that the customer needs. But when rates change, the brochures must be reprinted, redistributed, and the old version is trashed. The alternative is to produce collateral with a long shelf life, but reduced selling power because of its generic content.

Many banks are realizing that on-demand color printing applications in the branch are ready for prime time. From custom offers in the welcome kit, to dynamic pricing, to signage inserts, to saving and retirement projections, it is becoming clear that on-demand color printing will be a part of the sales-centric branch. This is particularly true for Wealth Management customers who expect high quality, customized collateral.

This is another area in which HP is focusing its development to create, distribute, control, and print high-impact color documents in the bank branch. This includes the capability to have corporate approved collateral printed locally on demand with customer specific acknowledgements and information. These emerging solutions not only substantially reduce the costs of marketing collateral, but provide the ultimate 1:1 marketing experience for customers.

Radio frequency identification (RFID) solutions from HP

Radio Frequency Identification (RFID) offers a proven, cost-effective means for better managing your information technology assets. Reducing the time and effort required to deploy, locate and maintain these critical business assets provides benefits such as cost savings, risk avoidance and improved security, while also enhancing your ability to meet internal and external compliance requirements.

Every HP Radio Frequency Identification (RFID) solution leverages proven global experience that spans people, processes and technology. HP RFID Services consultants have industry-specific knowledge to verify that companies get the most from their business technology investments in these critical areas:

- **HP RFID Assessment Service**—HP consultants work with organizations to define the scope and goals of RFID projects, based on business requirements. By reviewing and assessing business processes, applications, and infrastructure, HP will develop a realistic and cost-effective RFID deployment roadmap.
- **HP RFID Pilot Service**—HP experts collaborate with organizations to develop and implement low-cost projects that include thorough testing for integration and compliance, impact analysis, scoping, cost/benefit analysis, and strategy determination for future phases.
- **HP RFID Training Service**—HP trains organizations in the specifics of RFID, including basics, tags, hardware, middleware and data integration.
- **HP RFID Process Implementation Service**—HP implementation services encompass the complete integration of RFID technology and solutions into supply chain Information Technology Asset Management or (ITAM) operations. These services are designed to help organizations reduce the human element in locating, tracking, recording and communicating information about objects throughout the corporation.

- **HP RFID Infrastructure Deployment Services**—HP combines procurement, staging, tracking, shipping and project management services into a single offering to facilitate seamless deployment of the custom ITAM service, supply chain service, on-site coordination, hardware and software integration, and all reporting and tracking.
- **HP RFID Infrastructure Lifecycle Management Service**—HP provides a range of support services for RFID environments. HP Lifecycle Services begin with traditional remedial hardware and software maintenance, which can be expanded to include additional services such as remote diagnostics and monitoring, on-site support, end-user help desk, and outsourcing services.

Business benefits of RFID deployment

Increases inventory accuracy

- Reduced per-inventory costs allow more frequent auditing
- Mitigated possibilities for human error due to automation
- Real-time feedback immediately alerts operators to any discrepancies
- Enables remote locations or those with few assets to be monitored at the same level as larger headquarter locations

Enhances asset utilization

- Provides the ability to immediately and reliably locate specific assets wherever they are
- Improves responsiveness to shifting equipment demands
- Improves return on asset by enabling full leverage of existing information technology components

- Controls capital expenditures by reducing redundant purchases
- Helps prevent loss of critical intellectual property stored on digital devices

Improves security

- Provides real-time reporting on asset location and movement with alerts when assets are tampered with or enter restricted areas
- Extends security to remote, infrequently patrolled and inhospitable areas
- Restricts information access to only those individuals with permission
- Helps prevent loss of critical intellectual property stored on digital devices

Reduces cost and complexity of maintenance and configuration

- Asset tags can store additional information, including maintenance histories, based on company requirements
- No line of sight required for asset identification, shortening time required for servicing
- Facilitates identification of assets needing reconfiguration or upgrades, or coming off-lease
- Enables automated work orders and preventative maintenance rescheduling
- Facilitates regulatory compliance
- Improves asset transparency across the enterprise, potentially reducing audit penalties
- Enables rapid location of assets holding compliance related data wherever they are
- Helps identify assets needing additional security protection
- Delivers a very detailed audit trail

Business Intelligence

Data governance: From golden thread to a fine fabric in financial services

By Rodney Nelsestuen, FSI Analyst, The Tower Group

In Hans Christian Andersen's fairy tale, *The Emperor's New Clothes*, a king is duped into thinking that the fabric of his new suit has been woven of such fine golden thread that only the most worthy can see it. His subjects, and even the king himself, refuse to believe there is no suit at all, fearing they will be labeled 'unworthy'. In the end, an innocent young boy exposes the sham when he cries out, "But he has nothing on at all."

The marketplace has a similar message to poorly planned and executed financial products or services. Consider the reaction of an elderly widower who is sent an offer of spousal life insurance or a college investment plan, both financial needs that his household satisfied decades ago. Or, think of the number of mass credit card offers sent to people who are already customers of the same issuer, or the home equity loan offers sent to renters. Missteps such as these are often based on data that is incorrect or out of date, buried in unreachable or unknown silos, heavily duplicated, or otherwise compromised.

Data is the thread with which a financial services institution (FSI) weaves its business. Data is fundamental to envisioning the future; developing and executing long-term strategic plans; designing, developing and delivering new products and services and structuring operations for a differentiated customer experience. Without reliable data, an FSI cannot deduce information and leverage knowledge.

Data exists in many forms and in many locations within an FSI—in core systems, independent applications, and alliance and business partners' systems, in both structured and unstructured form, and as

data points in employees' and customers' hands. It also exists at many levels: as transaction data, metadata, and reference data. Because it is a valuable corporate asset, it is critical to discover, capture, and leverage data from its many sources and extend its value for tangible business results. Technology solutions, including software and hardware database systems, have improved the ability to leverage data, but not without significant cost and complexity, an issue that vendors must continue to address.

To achieve the best business results throughout the enterprise, FSI leadership must address the challenges of data management as follows:

- Develop an enterprise-wide data governance approach to manage the proliferation and quality of data in a holistic manner
- Establish standardized approaches to data management with well-defined disciplines and quality standards, regardless of who "owns" the data
- Leverage technologies that are able to discover data to the finest detail and most fundamental element while meeting a variety of latency requirements
- Select the database technology, development, management, and delivery approaches that align with enterprise needs for provisioning data over the long term

From the vendor side, recent developments have led to improved results in data provisioning, but more needs to be done. Vendors must provide significantly better flexibility and responsiveness if FSIs are to effectively and dynamically leverage the exponential growth in data to be governed. Some key considerations:

- Technologists need to rethink the current trend of incremental improvement to existing data management approaches

- Reducing latency or more narrowly aligning what a solution delivers for a specific need while at the same time growing the number of technology solutions in use will not meet the long-term needs of leading FSIs
- Those FSIs that seek to build a marketplace and/or operational advantage through superior use of dynamic information flows must have that information delivered within the flow of their business and not based on the limits of the technology.

Find stability in an unstable banking market.

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Data, data everywhere

Imposing Order on Information Chaos

By Christopher Lawton

Austin, TX – One of the world's largest sellers of information technology has spent the past two years cleaning up a jumble of in-house data.

When Randy Mott joined HP in July 2005 to serve as its Chief Information Officer, he found the software and systems HP used to track information about the state of its business numerous and messy.

Some systems, for instance, logged information like sales and pricing by product, while others recorded sales information geographically. Making matters worse, commonly used financial information such as gross margins, a measure of profitability, were calculated differently from business to business.

The lack of consistency was a drag on sales and profits. For one thing, executives had to make decisions based on relatively stale data, because compiling any sort of information about the business from the various systems could take as long as a week. Seemingly simple questions, such as how much the company was spending on marketing across its different businesses, were difficult to answer.

Also, without a consistent view of HP's entire business, executives had trouble making decisions on matters such as the size of sales and service teams assigned to particular customers. Just as important was

the cost to run the separate systems, many of which required specially trained IT staff to operate.

"We needed better information," says Mr. Mott. "Setting management goals becomes very tough if everybody is using different numbers to keep score."

To clean up the mess, Mr. Mott and the executive team made HP the first test case for a business-intelligence system the company was developing called Neoview. Now over two years into the effort, HP has consolidated nearly three-quarters of its old data-storage systems. Meanwhile, it has begun selling the Neoview system and even landed retailing giant Wal-Mart Stores Inc. as an early adopter.

Companies typically use business-intelligence systems built from numerous "data marts"—database software that tracks and measures just a portion of data from a given business. Analysts say companies often start data marts as a quick fix for handling information they need to track. But the systems can pile up and are costly to maintain. HP had more than 750 data marts tracking information from operations around the world when Mr. Mott joined the company.

In November of 2005, he and his team set out to consolidate all those data marts, hosted on various server and storage sys-

tems, into a single collection of information called an enterprise data warehouse.

Mr. Mott pulled many of the employees that were minding the hundreds of data marts into a single team of roughly 300 people. That team is creating a consistent way of framing information and modeling data across the entire company, and then importing information from the various data marts one at a time.

But managing HP's information is too big a job for even Neoview to handle alone. HP works internally with several software vendors, such as Microsoft Corp., Oracle Corp. and SAS Institute Inc., to keep its systems up and running well.

In particular, SAS works with the company's internal teams to provide advanced statistical analysis of information that comes from HP's enterprise data warehouse.

Today HP has managed to consolidate the hundreds of data marts it started with into just over 200—retiring systems at a rate of a dozen per week. By last November, the company had all financial data across the \$100 billion company being accessed through Neoview.

There are signs the company's efforts are paying off. HP says it is now able to perform 12 times the number of data queries, updates and other transactions involving its

financial database over the course of three months that it would have been able to before it began using Neoview. In one month, the number of transactions peaked at nearly 50 billion.

Last Fall, HP began using Neoview to track how much the company spends on marketing across all its business units. The system allows HP to track spending by media sector and by customer segment, world-wide or by country, something the company was unable to do before.

Using Neoview, executives are now able to make more-informed decisions about where to spend to get the biggest bang. HP says its next step is to integrate that information with inventory and customer order information.

Mr. Mott expects all of HP's information to be consolidated by July of this year into a single data warehouse, and expects to have 50,000 employees trained and able to access the system by 2009. Ultimately, he'd like to increase the number of people with access to the system, both inside and outside the company.

"Our vision of where this information goes in the future is to make it available to customers," Mr. Mott says.

Managing risk intelligence

By Geoff Burkholder

The Basel II Capital Accord requires banks to assess risk in each area of their business and set aside adequate regulatory capital. Complying with Basel II qualification standards requires a significant record of consistent, accurate, and granular data within the credit management information systems. Over the long term, full Basel II adoption calls for significant advancement in the way banks identify and manage the drivers affecting their risk portfolio. A critical success factor in enabling this advancement is readily available risk data that is consistent, of high quality, and (most importantly) predictive of behavior.

In many banks, each LOB manages their own credit risk, and the bank as a whole has been consistently effective in establishing its risk reserves. That said, when audited, it is more difficult to prove the capital reserves are adequate since there is no enterprise-wide credit risk system or data roll-up.

Many banks have found themselves investing huge costs in terms of money, time and resources trying to comply with Basel II requirements. With that challenge in mind, HP developed a Risk Intelligence Solution which is a complete solution for the acquisition, data integration (cleansing, quality, and data certification), and correlation of

data across lines of business for risk intelligence and regulatory compliance. In fact, this comprehensive solution goes beyond Basel II to incorporate international best practices for risk management. It permits the consistent definition, storage, collation, extraction, and analysis of risk data across all risk categories and asset classes.

HP's Risk Intelligence Solution can be thought of as a "compliance appliance"—it is pre-integrated, prepackaged, and includes a comprehensive physical data model, a high performance business intelligence platform, and consulting and integration services. This packaged risk intelligence application is coupled with HP

data provisioning consulting services addressing the acquisition of necessary data to make the application most effective. The solution compresses design time and implementation schedules with its fully defined and populated physical data model—the HP Risk Data Repository. While detailed and comprehensive, the physical data model is completely modular to enable implementation in manageable work streams. It can co-exist with existing LOB risk information systems—merely adding enterprise-wide roll-up, cleansing, quality and data certification.

Payments

Are you ready for the HP integrated framework for payments?

The promise of an integrated payment platform or “payment hub” is attractive to nearly all banks. A payment hub offers a centrally managed customer experience, doing business the way the customer wants to do business, shorter paths to new product rollouts, guaranteed quality of service, and seamless visibility into the entire payment process. All of this holds tremendous promise for banks of nearly any size.

This promise faces many long-term challenges. Will your “heritage” core systems accept a new virtual “front door” without massive and costly customization? Can you manage the risk of simplifying the massive “technology overhang” and systems overlap from years of mergers and acquisitions? Can you begin to make progress in service improvements while reducing costs and increasing non-investment income, without the “payment hub” project becoming a 10-year, \$50 million investment? Can you align IT, operations, and customer-facing groups to define and fund the project?

Integrated payment platforms require several pre-requisites to expedite success. First, a highly available and scalable mechanism to control the customer experience, often known as a “gateway,” must integrate with existing portals and provide a future-compatible connectivity tool that allows customers to connect to the bank in the manner they choose. With changing formats, file types, and product offerings, the gateway must be capable of supporting current and future standards.

Second, integrated payment platforms demand a comprehensive file movement strategy. An integrated payment

platform will concentrate the massive volumes of files, many of which are extremely large, currently moving through a variety of bank systems to a central point. Message-based infrastructures, while valuable for many purposes, tend to struggle under the weight of true file movement. This can impact processing timelines, SLA compliance, guaranteed delivery, and more.

Finally, a comprehensive file and process visibility solution is required. By adding this solution, both corporate treasury business users and technical support staff gain real-time supervision and visibility of file and message movements. They can customize dashboards to provide the exact level of detail desired by each individual involved in the daily treasury and cash management process.

When you introduce an integrated payment platform, you enhance your current systems, prepare to accommodate future developments, gain visibility, heighten the quality of your service, and yet create little to no disruption in your current workflow. Knowing this, the question is not “Are you ready for an integrated payment platform?”

The question is “Can you afford not having an integrated payment platform?”

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Taming the complexity of payments processing

By David Jasso

Today's wholesale banking executives face a significant set of challenges in growing their payments business. Increased commoditization of treasury services has increased pressure on banks to differentiate themselves by the quality of the customer experience they deliver. Standing in the way of this objective is a legacy of siloed payment operations with significant complexity and redundancies. Merger and acquisition activity has only exacerbated these issues.

Challenges facing payment executives

Customer experience as the basis of competition

Wholesale banking services are increasingly viewed as commodities by the corporations that consume these services. Consequently, the basis of competition has shifted heavily toward a focus on price. In this hyper-competitive world, providing differentiated customer service has become a key strategy for maintaining a competitive position within the wholesale payments arena.

Unfortunately the expectations of corporate treasurers are increasing dramatically. Corporations have successfully implemented technology to conquer internal and external integration hurdles with supply chain management, and they have similar expectations for the banks that service them. But before banks can deliver these services they need their own integrated and holistic view of their payments business.

Improving operational efficiency

Whether retail or wholesale, all payments processes share a common set of characteristics. They all have of a source of funds, a security model, and a

clearing and settlement network. The similarities between payment types extend beyond data elements to the process steps that encompass receipt of message to settlement and a finite set of steps in between. Lastly, all payment methods require certain services such as pricing, limit checking, balance validation, and risk and fraud management. Despite these similarities, historically each payment type has grown up in a different and unconnected operational silo. Within each of these silos there are duplicated services that could be leveraged across silos. Making the problem of duplication more difficult is the amount of merger and acquisition activity that permeates the financial services landscape.

Addressing new regulations

New regulations, such as Basel II and Sarbanes Oxley, are increasing the need to understand operational risk at an enterprise level within banks. The ability to positively impact capital reserve requirements—through the proactive mitigation of operational risk—creates incentives for the bank to allocate out the cost of carrying these reserves to the operational units most responsible for generating the risk.

Given the high level of operational risk historically associated with activities such as high-value payments, there is ample opportunity for wholesale payment operations to contribute to programs aimed at reducing operational risk and thus reduce the level of required reserves.

Adding new market infrastructures requires banks to implement new or modified data formats, communication protocols and security methods. Given

the high level of complexity associated with payment infrastructures, banks are extremely challenged to implement these changes in a timely and cost effective manner. Irrespective of these challenges, banks must still find a way to quickly respond to these challenges or risk regulatory sanctions and significant loss of market share.

Long-term transformation

The long-term goal of many banks to address these challenges is transformation through the implementation of an Enterprise Payments strategy. Enterprise Payments is a paradigm shift where the entire payments infrastructure of the bank is decomposed into a set of common and unique services that lie in a payments hub. In this hub, all payments data is held in a single data store and all payments instruments, channels and core systems interact via this payments hub.

This approach achieves multiple objectives. First, it solves the problem of integrating data related to customer transactions in order to achieve a single, real-time view of the customer. Secondly, it offers considerable efficiency improvements by rationalizing redundant processes across payment types and channels. It also eases the pain of integrating legacy systems by eliminating the need to integrate on a point-to-point basis. Finally, it helps to address the need to understand operational risk at the enterprise level by creating a single unified view-to-payments processing across the enterprise.

While most senior banking executives recognize the desirability of this long-term direction, no bank has the luxury of a wholesale 'rip and replace' strategy.

The cost and associated risk of such a strategy is simply too high.

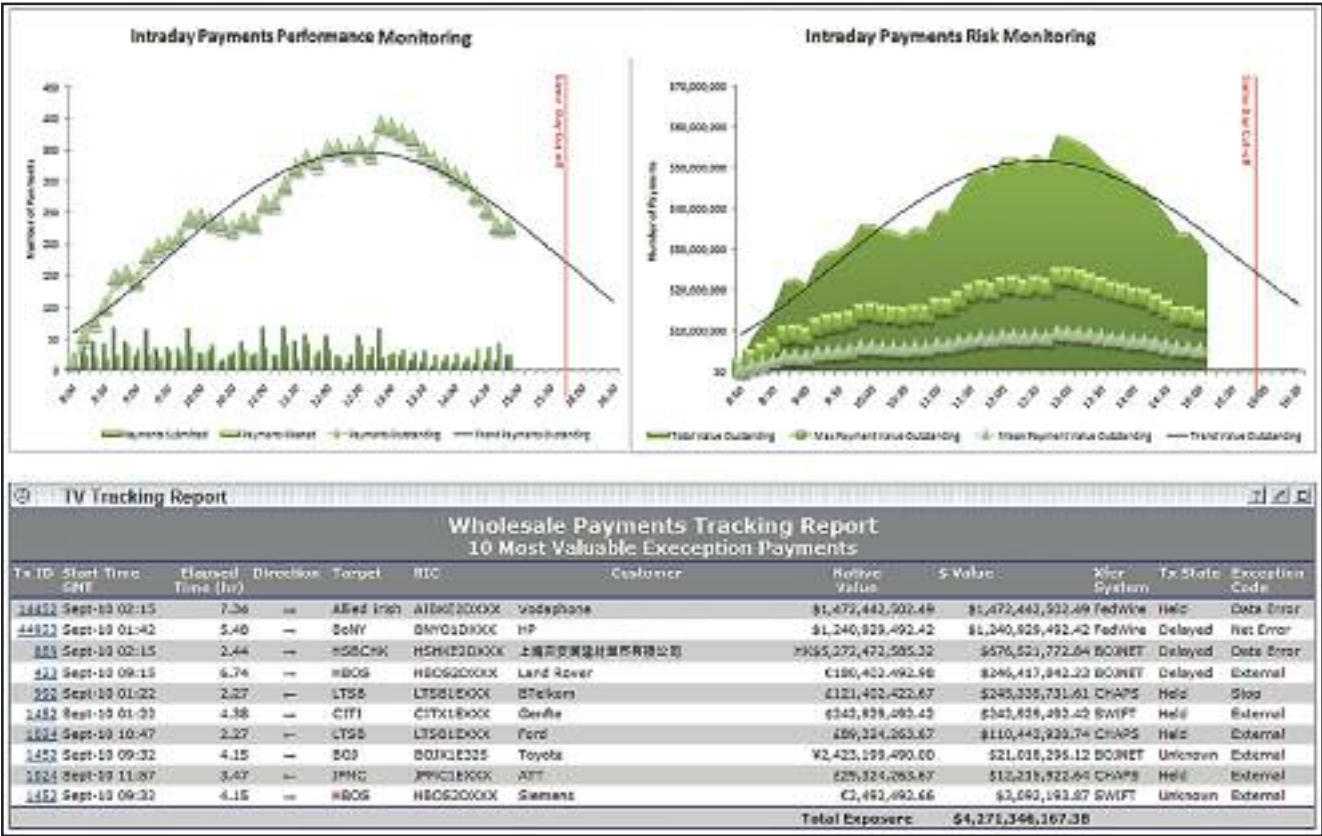
Business Service Management—The critical first step

Business Service Management (BSM) for Wholesale Payments is a logical first step in addressing the challenges related to delivering differentiated customer service, increasing operational efficiency and reducing operational risk. BSM also lays the foundation for long-term transformation by supporting six sigma process re-engineering programs that help move banks forward on the path towards enterprise payments.

The HP Business Service Management (BSM) solution for Wholesale Payments is focused on immediately increasing the overall effectiveness of high-value payments operations while laying the foundation for longer term transformation of all of the banks payment processes—both wholesale and retail. HP's BSM:

- Enables customer self-service inquiry to deliver a positively differentiated customer experience
- Enables improvement in the day-to-day functioning of the payment process by increasing visibility into the health and performance of the payments process
- Enables the creation of six sigma benchmarks that can lay the foundation for near term process improvement and longer-term process transformation
- Enhances transparency of the payments process that leads to clearer identification and mitigation of operational risk elements

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Transaction level tracking

The HP's BSM enables the line of business to monitor and react to operational issues in real time. The same solution also enables customer service owners to quickly and easily locate any single or any group of payments progressing through the payments process.

In essence, BSM is the equivalent of FedEx tracking but for payments instead of parcels.

BSM in Action: enabling customer self-service

The HP BSM solution tracks every payment from front-end initiation all the way to the back-end core systems that are likely hosted on mainframes. As such, it is possible to ask and answer questions such as: Where are all of the payments that have been submitted by Hewlett-Packard? How many payments worth more than one million dollars are in the repair queue?

Once a bank has the capability of tracking every single payment that is submitted and understanding where it is in the process, the bank is in a position

to decide whether it wants to expose this data to only the bank's staff, or whether they want to enable some level of direct customer inquiry. This is a first step in providing corporate customers the kind of information and control they are increasingly expecting from the banks that they entrust to serve their financial needs.

Increasing operational efficiency

Every transaction is tracked throughout its lifecycle in the payments process. This information feeds a higher-level process map that is used to track the overall health and performance of the real-time payments process. This process map provides information on how well the process is performing and where there are critical issues that require immediate

attention. The visualization of this information can be tailored for different audiences based on the role of the recipient within the organization.

Operational line-of-business owners receive information at the business process level. Escalations can focus on the payments that are impacted and on strategies to deal with specific or groupings of payments that require attention. IT can drill down to understand the specific infrastructure that might be implicated in any problem that needs quick resolution to verify that the day's payments are effectively processed.

Reducing operational risk

The payments process generates substantial operational risk. Failed payments can have serious ripple effects for

customers in the form of liquidity risk, and even impact the functioning of financial markets. Throughout the day, banks must prudently manage their payment flow within the limit of their central bank intraday credit. Banks with backlogged payments, or system issues, as payment system cut-offs approach must be in a position to make informed decisions on which payments to process, whether to consider a clearing extension, and how best to manage related customer issues.

This was the case in a major European bank who had experienced a number of significant processing issues that resulted in having to seek multiple extensions from its central bank in a relatively short period of time. The bank recognized that this situation presented significant exposure in the form of regulatory sanctions and reputational risk that were unacceptable. They looked to HP's BSM to increase the transparency of their underlying processes and thus provide them with a vehicle to improve operations while simultaneously reducing operational risk.

Understanding where payments are throughout the end-to-end process is central to mitigating these risks.

Powering six sigma initiatives

The information that supports the daily real-time view of the process can also be used for longer term trending of the performance of the payments process. This process trending information can then be used to identify those projects and IT investment initiatives that are likely to yield the highest value back to the business in terms of the impact of process improvement initiatives.





About HP

HP focuses on simplifying technology experiences for all of its customers—from individual consumers to the largest businesses. With a portfolio that spans printing, personal computing, software, services and IT infrastructure, HP is among the world's largest IT companies, with revenue totaling \$110.4 billion for the four fiscal quarters, which ended April 30, 2008. More information about HP (NYSE: HPQ) is available at www.hp.com.

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