EFFICIENT ENTERPRISE

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Q1 2010

IT'S TIME TO KICK BUSINESS INNOVATION INTO HIGH GEAR

Dell Power Solutions Special Edition
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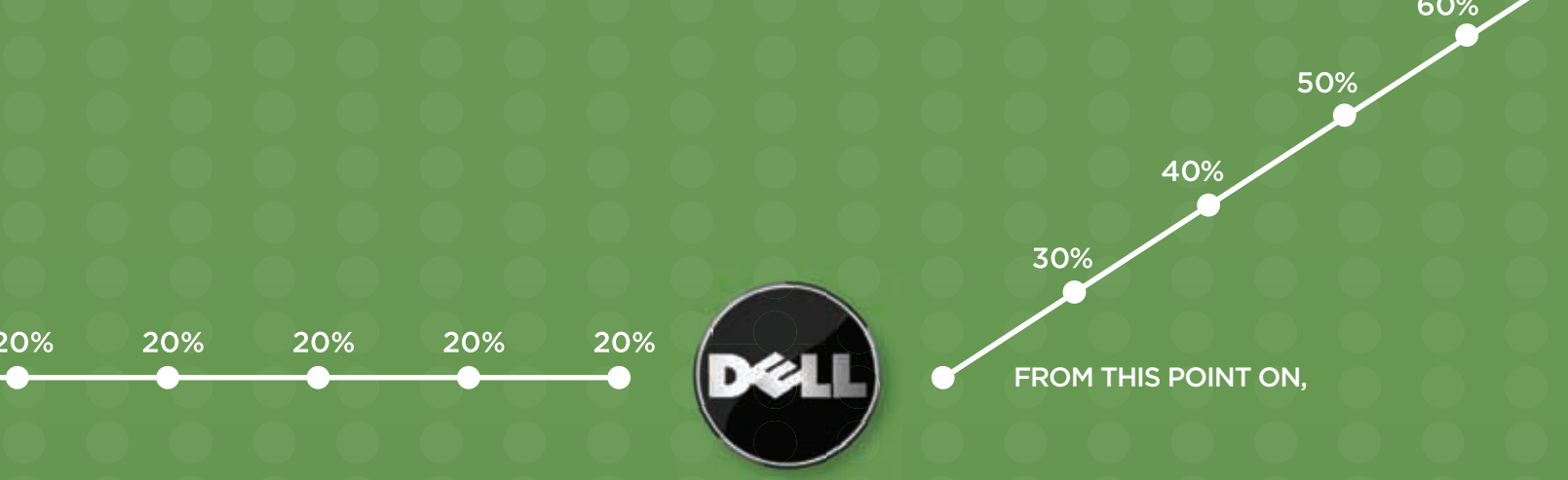

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In large enterprises, IT running costs devour up to 80% of IT budgets, starving innovation of funds. Break the status quo with Dell. Standardize, simplify, and automate so you can free up resources for new ideas. And let the status quo starve for a change.

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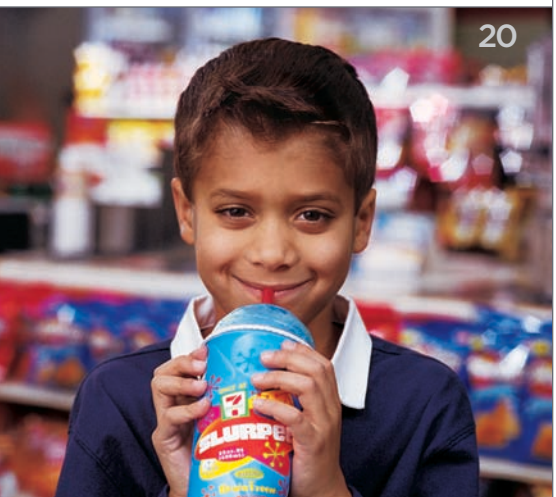

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REINVENTING IT

Enterprise technology is at a crossroads. The past few years have created a perfect storm of macroeconomic, business, and technology trends: a slowing world economy, tightening compliance regulations, mergers and acquisitions, intensified competition, and a groundswell of mobile and social media technologies. Demands on IT have never been greater—yet technology executives are being asked to tackle these challenges with far fewer resources than they had in the past.

At Dell, we are responding to this new reality by reinventing the way we approach technology. We are committed to making our IT systems and processes work more efficiently so they can deliver business value in more effective and more strategic ways. Our results have been compelling: We expect to save hundreds of millions of dollars out of our IT budget this year, and much of that savings will be reinvested in innovative development and new applications.

The strategies we used to achieve these results form the foundation of Dell's vision for the Efficient Enterprise. The Efficient Enterprise methodology focuses on finding underused capacity and helping businesses take advantage of it. By working more efficiently, your company can reallocate a significant percentage of your IT budget toward strategic initiatives and growth rather than just day-to-day IT operating expenses.

The Efficient Enterprise model also represents a fundamental shift in thinking about the relationship between IT and business. By relating technology spending to business results, the model elevates the conversation about IT operations to the level of strategic business decisions.

We believe that collaboration is the key to bringing the Efficient Enterprise vision to life. Dell is committed to helping you unleash innovation inside your enterprise by partnering with you to drive down your operating costs. We are also pleased to bring you this *Efficient Enterprise* special edition of *Dell Power Solutions* Magazine to introduce you to the transformational potential of the Efficient Enterprise model. Only by working together can we ensure the sustainable growth we all need for the future.

Respectfully yours,

Steve Schuckenbrock
President, Large Enterprise
Dell

IT'S TIME TO KICK BUSINESS INNOVATION INTO HIGH GEAR

The Efficient Enterprise model applies the same financial discipline to IT as to other business units and manages the IT budget in terms of meeting corporate objectives—addressing top-line sales and revenue as well as bottom-line profit and loss. Three key strategies enable CIOs to transition IT from a cost center to an investment center: standardization, simplification, and automation.

By Jeanne Feldkamp

Rapidly converging macroeconomic, business, and technology trends in the global economy have changed enterprise efficiency from a bragging point into a make-or-break proposition. Investing in the right technology mix can unleash innovation and sustain unprecedented growth. Choose wrong and you may strangle your organization's chance for long-term survival as mobile computing technologies and social media transform the workforce while consolidation, virtualization, and cloud computing continue to reshape the IT infrastructure.

This premium on efficiency is also transforming the way top executives view and budget for enterprise technology. IT supports virtually every business process—so a commitment to improving IT efficiency naturally leads to significant improvements in overall business efficiency.

However, technology strategists are facing a harsh reality. All too often, as much as 80 percent of the IT budget is consumed simply by maintaining a legacy environment. This situation is not sustainable. Organizations are already spending trillions of dollars each year to build and maintain IT infrastructures—and demand for IT services and innovation can only continue to grow. At the same time, a disproportionate amount of the IT budget in most organizations is typically consumed by maintaining daily operations, because IT is viewed as a cost center and strategic investments are limited to business projects.

Although technology advances have dramatically enhanced productivity over the last two decades, further progress on productivity gains tends to slow when budgets are trimmed. As a result, many CIOs are left without adequate reserves to invest in capital and resources for strategic projects, because a high percentage of IT spending now goes toward maintaining baseline services.

Unfettering innovation

Of the annual US$1.2 trillion in estimated IT infrastructure–related spending worldwide, 80 percent is devoted simply to maintain current systems—not on strategic projects. Dell has made an industry commitment to help take US$200 billion of inefficiency out of that spend to help organizations reallocate funding to innovation, growth, and competitive advantage.

The Efficient Enterprise strategy offers a new economic model for managing IT, from the desktop to the data center. Too many past approaches focused exclusively on savings, without accounting for how efficient the operation was—regardless of the cost. For this reason, it is essential to measure the contribution IT makes to the pursuit of corporate objectives rather than evaluating it in absolute monetary terms. The goal of the Efficient Enterprise model: Enable organizations to break free of the status quo, invest in innovation, and drive competitive advantage.

> "The goal of the Efficient Enterprise model: Enable organizations to break free of the status quo, invest in innovation, and drive competitive advantage."

The Efficient Enterprise strategy provides CIOs with a pragmatic and phased approach that maps out three key steps to help their organizations maximize efficiency and, in turn, deliver efficiency for the business (see Figure 1).

Standardization is about deploying solutions that leverage accepted industry standards to drive out the cost and inefficiencies that come with proprietary architectures. Simplification is about making the complex simple—leveraging pragmatic solutions like virtualization and storage consolidation to get the most out of your infrastructure. Automation is about streamlining services delivery and enabling self-service IT models where critical business services can be deployed through the cloud.

Standardize

Standardization is the practice of eliminating disparate, proprietary, and legacy systems and replacing them with standards-based components to reduce complexity. These efforts can both promote uniformity to help simplify IT staff training and simplify the end-user experience. Standardization also helps to reduce administration, troubleshooting, and repair costs—freeing IT staff to focus on strategic innovation rather than maintenance of legacy systems.

Dell has built its entire history on standardizing technology since the company began helping clients move to standards-based systems 25 years ago. Today, most enterprise applications run on x86 systems. Dell experts offer the flexibility, experience, and partner relationships to build the appropriate technology stack based on specific business and organizational requirements. In addition, Dell plans to continue driving innovation on open server and storage platforms—as well as IT processes, the network fabric, and IT tool sets.

x86, Linux®, Microsoft® Windows®, and other standards now offer comparable levels of reliability, availability, and serviceability (RAS) along with performance parity to proprietary legacy architectures for most business applications. These performance levels mean that standards-based architectures can leave your options open for best strategic advantage.

In addition, x86 infrastructures are flexible and scalable in both directions. Mainframes start out big and only get bigger, but the x86 architecture lets organizations buy only the capacity they need, then add to it on demand by racking additional servers and adding them to the pool of virtual machines. Rather than forcing your IT department to buy old technology to accommodate growth, flexible x86 infrastructures can take advantage of the

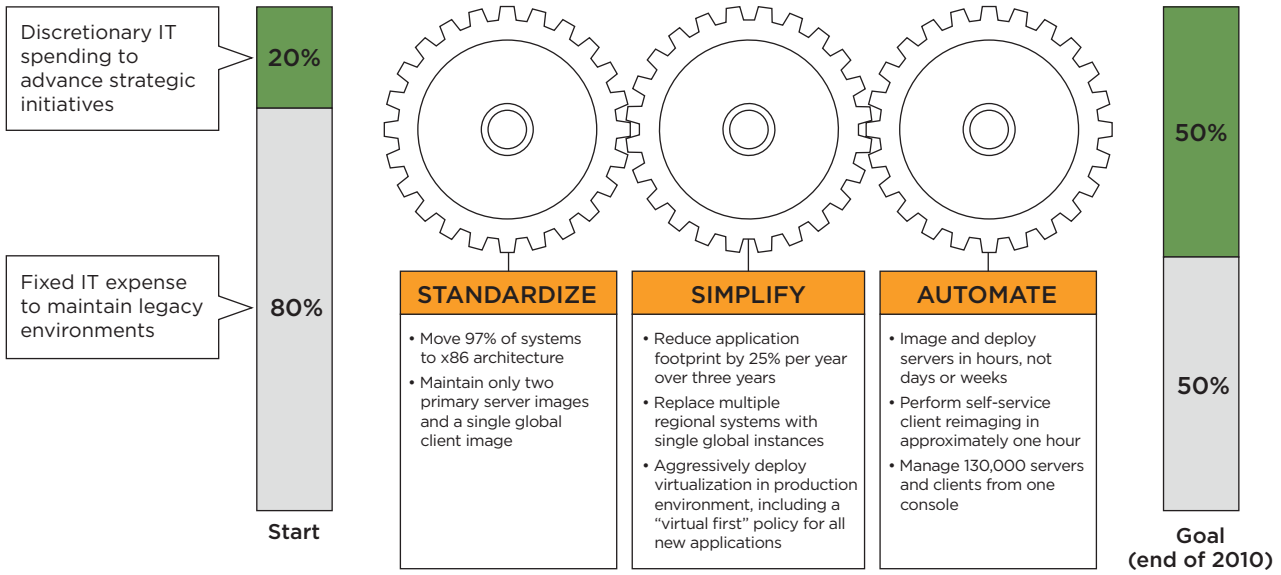


Figure 1. By standardizing, simplifying, and automating systems throughout its own organization, Dell plans to reduce nonstrategic spending from a typical 80 percent of the IT budget to approximately 50 percent by the end of 2010

most powerful and efficient servers with each node they add.

Standardizing processes is equally important. Internal development and redevelopment of processes can be time-consuming and costly—but by leveraging the IT Infrastructure Library (ITIL) approach to IT service management, enterprises can increase productivity and reduce labor expenses. The Dell™ Management Console Powered by Altiris™ from Symantec™ is based on ITIL principles and helps to facilitate the adoption of industry best practices in IT environments based on Dell systems.

Steve Hassell, vice president and CIO at Emerson, selected Dell blade servers with the Intel® Xeon® processor 5500 series to power all of the company's x86 platform–based systems. "We stepped back and asked ourselves how we could raise the bar in terms of performance, scalability, reliability, and low operating cost," says Hassell. "We also had to dramatically reduce our server footprint and power envelope if we were going to eliminate our approximately 135 data centers." The company expects to consolidate 3,800 physical servers down to approximately 200 new, more powerful Dell servers that are capable of delivering worldwide IT services for the entire company.

Simplify

Once the environment is standardized, redundant and underutilized systems can be identified much more easily. Simplification can now take place in the form of consolidation and elimination of data centers, servers, storage, and applications. Virtualization is one key strategy for simplification—by facilitating server and storage consolidation to make efficient use of computing resources, virtualization can deliver significant cost savings compared with all-physical configurations. Reducing application space through virtualization allows IT staff to easily remove and repurpose servers for other uses. What's more, virtualization provides a path to cloud computing services, because software delivered as a service requires computing power and storage resources that are available on demand.

Simplification also cuts administrative overhead by allowing organizations to avoid purchasing unnecessary infrastructure. It can also reduce the number of potential failure points while boosting uptime, reducing touch points, and mitigating risk. And with fewer physical systems to manage, IT leaders can reduce power and cooling expenditures—the first step toward environmentally responsible operations.

Japanese telecommunications company Kyocera uses virtualization to optimize the use of IT resources and deliver services to users on demand. "Previously, when customers came to us with substantial data center hosting requirements, we would have had to purchase additional servers to meet demand," says Yutaka Sugita, supervisor for the KCCS Platform Group. "With virtualization, we can boost or reduce computing resources based on business priorities without having to purchase additional equipment."

Consolidating management platforms offers another avenue for simplification. The Dell Management Console helps simplify IT and create stability by shrinking infrastructure management to a "single pane of glass." It provides centralized

> "This premium on efficiency is transforming the way top executives view and budget for enterprise technology."

access to management tools and a common data source for managing the entire infrastructure—helping to enhance productivity and give employees more time to focus on innovation rather than simply keeping the lights on.

In addition, tiered storage configurations can help lower costs while simplifying storage management. Recently created or frequently used information is stored on fast, more expensive media and automatically moved to lower-cost systems over time according to business rules. This approach can help IT staff maintain high data availability while simplifying retention and recovery.

"Keeping data in centralized, shared systems greatly simplifies storage management, especially compared with server-attached storage," says Rob Branson, director of infrastructure technology for PACCAR. "With fewer storage systems, tasks such as backup and recovery are faster and easier. We also plan to replicate our data center for disaster recovery, and we expect the SANs will make that process simpler."

Other strategies for simplification can include data deduplication, which eliminates redundant records across the enterprise to streamline information management and storage administration, and centralized systems management through software as a service (SaaS).

Automate

The goal of automation is to deliver new services models to keep technology—not people—working harder. By reducing manual interaction with IT infrastructure, companies can cut labor expenses as well as boost productivity and better manage growth. With a standardized and simplified environment, it is now easier and more cost-effective to implement tools to automate the IT infrastructure.

SaaS offers one path to automation. For example, Dell Email Management Services (EMS) can help organizations effectively avoid e-mail downtime by offering a standby e-mail system designed to make primary e-mail system outages virtually invisible to end users and help ensure that key data is never lost—no matter what happens to the IT infrastructure or staff. In addition, Dell EMS can streamline legal discovery and compliance for e-mail archives.

Managed services are another route to increased IT automation. Dell offers a range of services—from system configuration to help-desk management—designed to free up IT resources by managing client operations remotely. For companies moving to the Microsoft Windows 7 OS, Dell provides comprehensive end-to-end services that utilize patented tools and automation to provide a rapid, cost-effective, and trouble-free migration.

The convenience store chain 7-Eleven uses Dell Distributed Device Management Services to track dispersed assets, distribute software, and manage patches. "All our laptop software is patched as needed," says Brian Cator, senior director of IT at 7-Eleven. "This is true not only for Microsoft patches, which are very frequent, but also antivirus patches, which improve our overall security. And with up-to-date software, fewer incidents, and better compliance, our user base is 30 percent more productive with Dell Distributed Device Management Services. And I sleep better at night."

Changing the rules

Unleashing innovation is more important than ever—and creating a solid foundation of enterprise efficiency is the first step toward making it happen. By standardizing IT infrastructures, simplifying technology and processes, and automating services, IT leaders can put their organizations on the path to business advantage.

Five key technologies can provide the tools you need to transform your enterprise: virtualization, mobility management, storage optimization, cloud services, and automated IT management. Learn more about these game-changers in "A Simple Guide to the Efficient Enterprise" on page 10.

To learn more about the Efficient Enterprise, please visit DELL.COM/Efficiency. EE

Jeanne Feldkamp *is a business and technology writer based in San Francisco.*

BRAVE NEW WORLD

CIOs are walking new ground as they seek to improve competitive business advantage in an economic downturn—balancing the pressure to reduce capital expenditures against unprecedented opportunities to increase productivity and stay on the forefront of innovation.

In today's global economy, IT effectiveness and business innovation are two sides of the same coin. As the strategic importance of advanced technology and best-practices management comes into sharp focus, executives are looking to eliminate wasteful spending and translate productivity improvements into measurable business returns. But what does this mean on a day-to-day basis? What can CIOs do to help ensure that they invest wisely for sustainability and growth?

The report "Unleashing Innovation Through Efficiency" provides insight into how CIOs can begin to address these questions within their own organizations.

The new reality of IT. Resource constraints are the number-one factor that can limit organizational growth. To succeed in the face of today's economic pressures, executives must change the balance of their IT spending. Particularly for large enterprises with technology-dependent business processes, evolution is virtually impossible when 80 percent of IT resources are committed to legacy systems that do little more than maintain the status quo—leaving just 20 percent to invest in strategic development. As a result, smart CIOs are advocating a fresh approach to enterprise efficiency. Instead of focusing simply on cost-cutting measures, they are developing new methods to evaluate the business return on their IT investment and the most effective ways to allocate the IT budget following from that analysis.

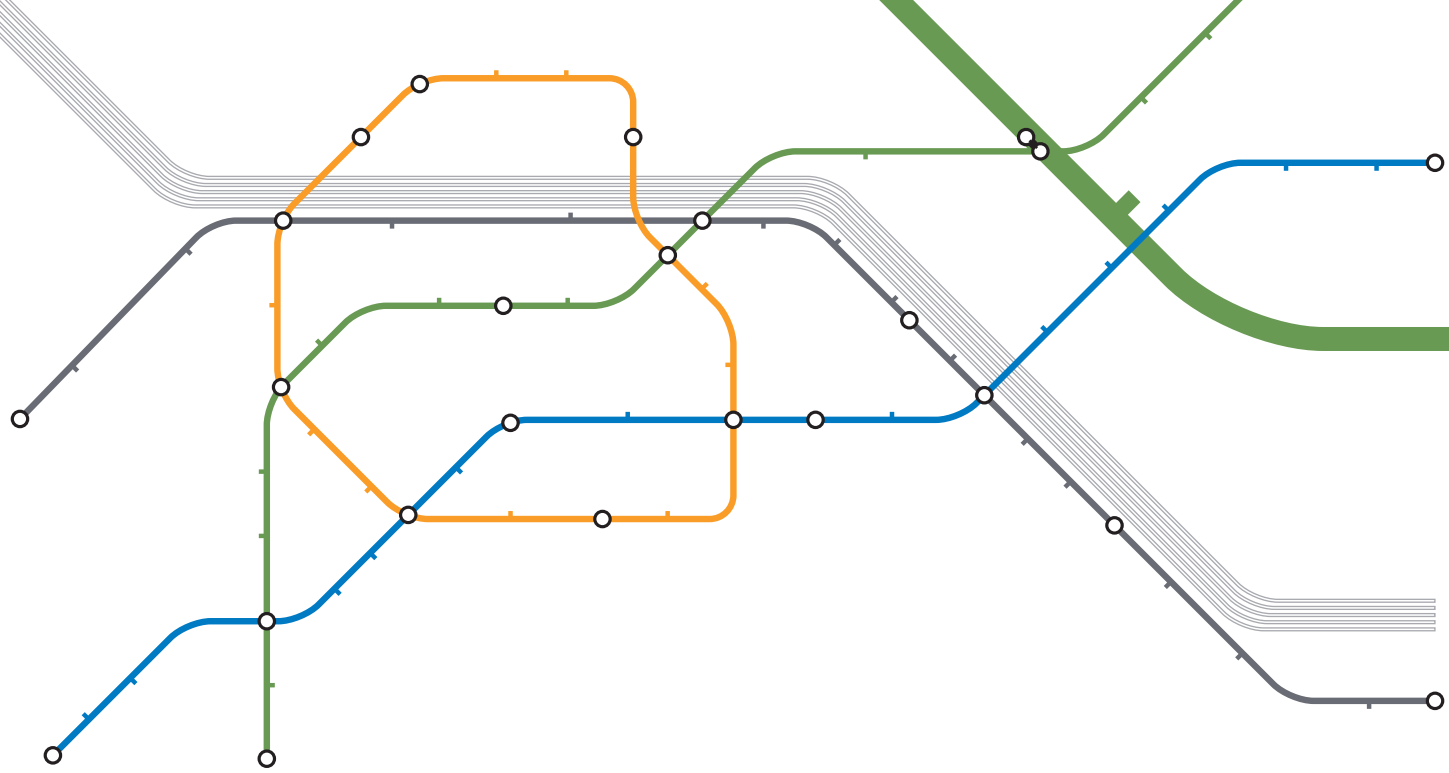
The pursuit of enterprise efficiency. What could your company do if you retained all of your talent while gaining the opportunity to refocus it on strategic initiatives? Enterprise efficiency is the key to answering this question. For example, Dell has shown that by freeing up computing resources, cutting capital expenditures, and streamlining employee efforts, large enterprises may succeed in reallocating 30–50 percent of their IT budgets toward strategic development and sustainable growth.

How to get started. Standardization is the first step toward achieving these goals. As database workloads outpace aging hardware with demands for higher compute density, memory capacity, and I/O scalability, industry-standard architectures can go a long way toward lowering the cost of doing business and freeing up IT resources that can be redirected to innovation.

Simplification is the second key to unlocking efficiency. It isn't unusual for a large corporation to run as many as 10,000 different applications; consolidating onto a smaller number of applications and platforms leads to dramatic savings on maintenance and support.

Automation is the last step toward redirecting IT budgets from maintenance to innovation. By reducing labor costs—which account for a significant proportion of IT spending—automation allows enterprises to work within tight budgets to advance business agility while also facilitating short-term contracts, improving flexibility and scalability, and increasing productivity with self-service IT models.

Becoming an Efficient Enterprise is within every company's reach. Because the Efficient Enterprise is an operational framework, not a product, organizations can begin benefiting from this initiative immediately. To request your copy of the full report, please visit DELL.COM/Efficiency.



A SIMPLE GUIDE TO THE EFFICIENT ENTERPRISE

Recent technology advances in five key areas put efficiency gains on the fast track. Here's how Dell can help CIOs capitalize on virtualization, mobility management, storage optimization, cloud services, and automated IT management.

Boosting enterprise efficiency doesn't have to be complicated. Dell combines the latest technologies with best practices and extensive industry expertise to help IT executives get their bearings in five primary areas that accelerate adoption of the Efficient Enterprise model. Now, with the acquisition of Perot Systems, the expanded Dell Services team has more than 40,000 highly skilled professionals at the ready to develop and deliver end-to-end IT services and business solutions geared to reduce overhead and lower costs—so organizations can focus more of their resources on innovation.

Virtualization: Establish an operational framework

It's no secret that virtualization technologies help improve efficiency and cost savings through increased computing density, which can significantly decrease the floor space, power consumption, and administrative requirements to run a data center. At the same time, virtualization streamlines deployment, provisioning, capacity planning, chargebacks, security, and systems management. Unfortunately, many IT executives hit operational roadblocks that dilute their projected return on investment. To help overcome those hurdles, the Dell Services team focuses on the most opportune way to *operationalize* virtualization technologies as they are deployed.

For example, the Dell ProConsult Services data center optimization and virtualization practice helps enterprises tap into an extensive pool of expertise, innovative tools, and automated analysis to assist IT strategists in driving virtualization projects from pilot to production. Dell offers workshops that explore customer challenges, operational readiness assessments designed to help organizations understand the impact virtualization may have on their current environment, and gap analyses to identify action items for getting the company prepared for a virtualized environment.

In addition, the Dell Services team provides a virtualization operations framework dashboard for each engagement. This dashboard establishes metrics and provides reporting for critical success factors.

Mobility management: Simplify and centralize

While legions of remote workers are already changing what it means to conduct business as usual, mobile workers also pose a big challenge for managing and securing remote systems and data. Distribution and imaging of laptops can be complex and costly. Existing systems management tools are not designed to track and push updates for a large mix of mobile assets. In addition, confidential data must not fall into the wrong hands when a mobile system is lost or stolen.

Dell can help IT executives address these considerations through comprehensive mobility management solutions. For example, Dell can distribute client systems directly to end users through Dell™ Automated Deployment and Dell ImageDirect—sparing IT departments the cost and hassle of handling deployment and imaging processes in-house. In addition, Dell Distributed Device Management software, delivered as a service, provides a cost-effective systems management platform specifically designed to handle the needs of the mobile workforce. Laptop data encryption services also help keep data on mobile computers safe in case of loss or theft.

Storage optimization: Scale flexibly and cost-effectively

While IT budgets remain flat, data storage requirements continue to increase at a breakneck pace. As a result, a large percentage of IT staff resources are spent managing backup processes and searching for data. Even worse, unnecessarily redundant data can bloat systems and compound IT complexity.

Dell Data Management and Protection Services efficiently support data availability, retention, and recovery. The Dell Services team can create cost-effective archiving solutions to better manage record retention, as well as assist in migrating lower-tier storage to lower-cost platforms—which can dramatically cut total storage costs. Dell also helps IT organizations take advantage of advanced technologies such as data deduplication in the way that is most appropriate for their infrastructure.

As part of a broader storage optimization effort, Dell can design, plan, and implement a sound disaster recovery strategy that helps safeguard business continuity with explicit recovery time objectives and recovery point objectives. Dell supports these engagements with an industry-leading e-mail continuity solution, disaster recovery virtualization services, managed backup offerings, and an innovative crisis management and alerting service that helps companies communicate with employees during a crisis or disaster.

Cloud services: Free IT staff for strategic projects

Traditional on-site systems can be slow to change and difficult to scale—a significant disadvantage as IT teams are asked to do more with less. Cloud services offer an efficient model that can augment existing infrastructures with additional flexibility and help free IT staff to work on strategic projects rather than day-to-day systems management.

Dell helps companies leverage the benefits of cloud computing by pragmatically combining the power of software as a service (SaaS) with Dell's infrastructure support and expertise. SaaS offerings can be deployed in as little as a day and scale when needed. Monthly costs are predictable, and enterprises pay only for what they use. With near-zero maintenance and automatic upgrades included, these services enhance IT flexibility and business agility. And when uptime is important for critical applications such as e-mail, a cloud-delivered approach such as Dell Email Management Services helps ensure fast failover to avoid disruption.

Automated IT management: Streamline maintenance

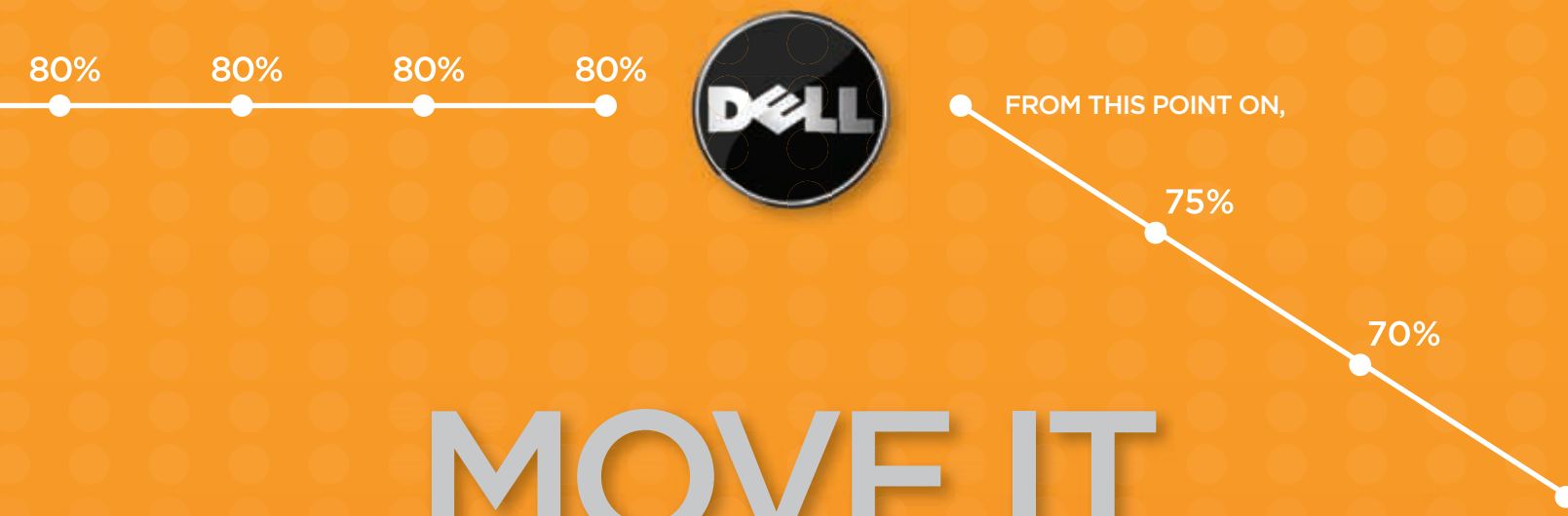
Dell Services goes beyond simply providing outsourced labor to bring best practices, advanced tools, and automation to the table. By managing any or every portion of the IT life cycle—from configuration and deployment to field service to asset recovery—the Dell Services team helps IT executives reallocate spending from systems maintenance to strategic initiatives that advance business and organizational goals.

For example, with the acquisition of Perot Systems, Dell now offers fully hosted virtual desktops. Providing desktops as a service helps eliminate the need for IT organizations to procure and manage their own physical resources. Companies buy only what they need—including related support, updates, and maintenance.

Pragmatic approach: Tailor IT services to organizational needs

In each of these five key areas, the Dell approach is modular, adaptive, and flexible—the Dell Services team helps CIOs take advantage of innovations such as SaaS and cloud delivery wherever they make sense. As a result, executives can buy IT services that fit their organizations best: multiyear contracts, pay-as-you-go managed services, or fixed-scope consulting engagements.

To learn more about how Dell Services can help your organization become an Efficient Enterprise, please visit DELL.COM/Services.



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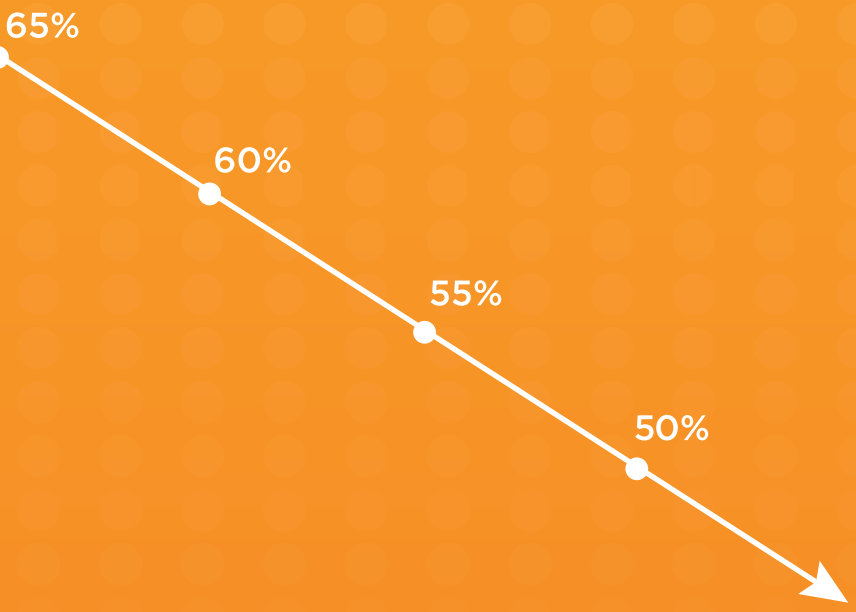

For many large enterprises, IT complexity has driven running costs to as high as 80% of the total IT budget. And instead of focusing on innovation, CIOs struggle to just “keep the lights on.” Time to change course. Partner with Dell to standardize, simplify, and automate so you can cut costs and free up resources to innovate.

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Drive down costs @ dell.com/efficiency

Executive Q&A: Robin Johnson

Dell has undergone a dramatic transformation through standardizing, simplifying, and automating much of its own IT infrastructure. Here, Dell CIO Robin Johnson discusses the process—and what becoming an Efficient Enterprise has meant for Dell's bottom line.

Dell's Efficient Enterprise methodology is based on firsthand experience, and the result speaks for itself. Over the last several years, the company's IT budget has consumed approximately US$1.2 billion annually. So far this year, Dell has reduced that amount by US$150 million and is on a trajectory to cut another US$200 million. Factoring in the cost avoidance of building a new data center, CIO Robin Johnson estimates Dell's total cost savings will be close to half a billion dollars. The lion's share of that money will be reinvested in innovative development and new applications. Johnson recently shared what he has learned along the way.

Why is Dell a good test case for the Efficient Enterprise model?

We have a tremendous amount of complexity in our business: online, manufacturing, commercial sales offices, presence in 90 countries, facilities everywhere. But we've been able to achieve an industry-leading cost basis, and we've been able to forever reduce our fixed costs. We've reduced our expenditures on data centers, servers, and system engineering. Now we can spend more and more on new projects that promote innovation.

Our biggest lesson was that it comes down to the principles: standardization, simplification, and automation. The fewer operating systems you have, the fewer tools you need to look at those operating systems, the fewer people you need to run the tools—all of those things enhance efficiency.

How has Dell gone about the process of becoming an Efficient Enterprise?

Dell got into the server business back in 1994. A lot of people don't realize we had legacy architectures—before we began making our own servers, we had all of the legacy architectures from Tandem, Sun, and IBM. And when you write code for a Tandem, you can't easily port that code to run on a Sun or an IBM system because there are different operating systems and different databases. That incompatibility makes application development and maintenance very expensive.

That's why Dell made the decision, around 2001, to focus on driving everything with the x86 platform as the standard. And we didn't just standardize the low-risk systems, the remote office systems, and the file-and-print systems. We took our core transaction processing—all of DELL.COM, all of our management systems, all of our financial applications—and put approximately 97 percent of it onto an x86 platform.

After we standardized onto the x86 platform, we simplified down to just two server OS images: a Microsoft® Windows® .NET image and a Red Hat® Enterprise Linux® image with an Oracle® database. That reduced our complexity by orders of magnitude for software licensing, monitoring tools, and support.

Most of the innovation that's happened over the past five years has been associated with the x86 platform. Traditional Unix-based platforms used to have an advantage because they could run multiple workloads on a single

server while incurring support costs for just one machine—but now, virtualization has brought that advantage to x86 systems. So when Dell does server provisioning or patch management or compliance updates, it's easy for us to propagate those things across 97 percent of our servers.

How has Dell used standardization to downsize its application base?

Historically, Dell has grown by geographic expansion. It's been a phenomenally successful strategy—but the fastest way of bringing our operations online in countries around the world was to take our code and modify it for each location. That created a lot of complexity. In addition, we ran a lot of small applications that were developed and supported by the user community within Dell.

Thirty-six months ago, we ran 8,741 different applications. Today that number is under 2,900. Our first step toward making that reduction happen was to get over the mentality that IT "owned" everything, and we frowned on lines of business choosing their own applications. A lot of the applications running now were created outside the IT department and have generated great returns for the business. They just hadn't been supported properly—and many of them were region or country specific.

So we declared an amnesty, and reviewed all of our applications against three criteria. First, does it deliver any value? If the answer was no, we turned it off. Second, is it part of a road map for a corporate system or an enhancement we can make to something we already have? If so, we delivered value that way. And third, is it unique? If so, we took it in-house, supported it the right way, and rolled it out to all of the countries where we operate as a globalized system.

Throughout the process, we worked with executives on the business side to help them understand how freeing up those dollars and freeing up that processing capacity could allow us to move faster on the major change programs they wanted to execute.

Why is virtualization so important?

The demands on IT have increased exponentially. Five years ago, standard Web pages may have been about 50 KB. They can be five or ten times that size now, thanks to video and other bandwidth-intensive interactive media.

Organizations need servers to help them manage large amounts of data, mine it, process it, and turn it into actionable business intelligence. But when you bring in more servers to meet the increased demands of the business, that additional infrastructure

STEP BY STEP:
How Dell Transformed Itself into an Efficient Enterprise

Dell knows the Efficient Enterprise methodology works because the company rolled it out first within its own data centers. Before initiating the Efficient Enterprise strategy, Dell spent 80 percent of its IT budget on maintenance of the legacy environment. The company followed three steps to dramatically improve IT returns.

97%
FIRST STEP: STANDARDIZE

Dell began its transformation by standardizing several of the key components within its data centers. The company chose to leverage the open systems architecture of the x86 platform for 97 percent of its servers, which previously had run on an assortment of legacy systems. Just two primary server images—.NET/Windows and Oracle/Linux—were used throughout the organization. In addition, Dell adopted a single global client image to dramatically simplify client management, upgrades, and maintenance as well as reduce costs.

25%
SECOND STEP: SIMPLIFY

After standardizing the core components of the IT infrastructure, Dell looked for further opportunities to simplify. After thoroughly reviewing the applications in use, the IT team reduced the company's application footprint by 25 percent per year over three years. Multiple regional systems were replaced with single global instances. IT leaders aggressively deployed virtualization throughout the production environment—even adopting a "virtual first" policy in which all new applications that do not require dedicated hardware are tested and deployed in a virtual environment.

130,000:1
THIRD STEP: AUTOMATE

After deploying virtualization and reducing its application base, Dell then focused on automation. Automated provisioning capabilities on the newly virtualized server infrastructure enabled imaging and deployment of servers in hours, rather than days or weeks. Today, users can reimage their client systems themselves in about an hour by running an application from their desk instead of relying on an IT administrator to manage the process. As a result, IT staff can manage 130,000 servers and clients from a single console.

50/50
GOAL

The Efficient Enterprise methodology delivered results quickly for Dell—and the company expects to continue reaping benefits into the future. Dell has already returned 30 percent from fixed spending to maintain a legacy environment to discretionary strategic spending and is on track to achieve 50/50 fixed versus discretionary spending by the end of 2010.

increases costs, space requirements, and power usage. And you've got to find ways to control that growth so you still have IT budget left over for strategic projects.

Virtualization gives organizations a fundamentally different way to manage their IT resources. In most data centers, server utilization is typically less than 20 percent. Many companies have huge server farms with plenty of excess capacity—but they can't get at that capacity because the servers are dedicated to running their own individual workloads.

> "The important measure of efficiency is how much money CIOs can drive from the maintenance side of operations to the discretionary side, to help create new value for the business."

With virtualization, the IT department gets the ability to run multiple workloads across that server farm. That helps to boost utilization rates, which allows you to do more useful IT work in a given group of infrastructure. We are now at 40 percent utilization at Dell—which is twice the useful workload we used to process on the same number of servers. It also helped us simplify our management and patching efforts, save on floor space, and reduce the number of servers we needed to image.

Client virtualization can also play a key role in transitioning to an Efficient Enterprise. By centralizing client images and having end users simply log on to their desktop from whatever physical computer they happen to choose, companies can make enormous gains both in cost-effectiveness and in quality of service.

How do you measure enterprise efficiency?

IT has traditionally been considered a cost center. Approximately 80 percent of the typical IT budget goes toward maintenance activities. So instantaneously, as a CIO, you are left with roughly 20 percent of your budget to create new value for the business. And because the demands on IT only continue to grow, the 80 percent or so that's dedicated to maintaining the status quo is under a lot of pressure. Also, IT budgets rarely go up in the current economic climate. So the key is finding ways to deliver more value when your fixed costs are under upward pressure.

Employees expect the technologies they use for their jobs to work 24/7. It's easy for the IT staff to get consumed with running the day-to-day systems end users need. But the important measure of efficiency is how much money CIOs can drive from the maintenance side of operations to the discretionary side, to help create new value for the business.

What is the best way to get started?

Most companies are spending around 80 percent of their budget before they even begin the year, just to run what they've got. Virtualization is a great way to break out of that rut. At Dell, we used our own services organization to do a lot of our virtualization. They're experts—they made the process easy.

Sometimes, a design change is all it takes to start the transformation and get the "aha" moments flowing. For example, Dell just opened its first completely wireless office in Brazil—which meant we eliminated wiring costs. It's a simple change, but it made a big difference. IT executives just have to reexamine what they are doing and change the rules. That generates the first savings, which then funds the next phase of innovation. EE

FROM THIS POINT ON,

DO MORE THAN SURVIVE. THRIVE.

IT running costs in large enterprises average 80% of the IT budget. You could drive yours down to 50% or less with Dell. And free up time, money, and people for new ideas. Like how to evolve faster than your competition.

The Efficient Enterprise runs on Dell.
Start innovating @ dell.com/efficiency

GOOGLE

SEARCHING FOR A COMPETITIVE EDGE

Google standardized on high-performance 11th-generation Dell™ PowerEdge™ servers for its Google Search Appliance while the Dell OEM group handles production, distribution, and support services—enabling Google to stay focused on what it does best.

To stay on top of its game in the growing field of enterprise search and continue building on the success of its Google Search Appliance, Google needs hardware that can provide outstanding performance. Standards-based Dell PowerEdge servers have met that criterion for several years—but with the exponential growth of electronic information, Google wanted to update its platform so the appliance could continue to deliver results rapidly and reliably even as the volume of search material expands.

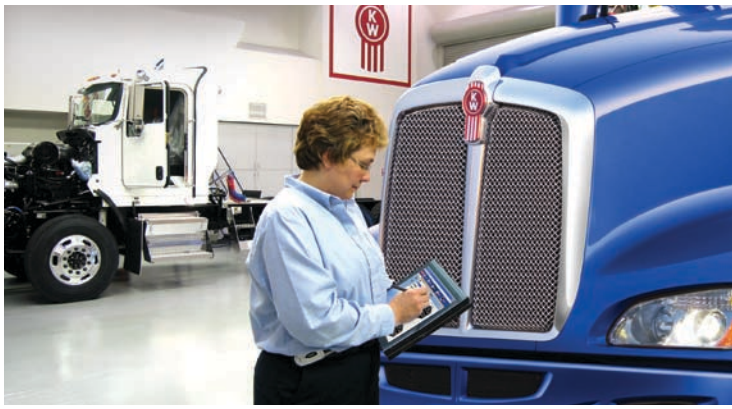
Working with the Dell OEM group has enabled Google to make a smooth transition—staying lean and focused on innovation. "We don't want to spend our time buying and testing server components, installing software, shipping out products, or providing hardware support," says Cyrus Mistry, enterprise product manager at Google. "Dell OEM is an end-to-end service provider that handles the time- and labor-intensive tasks involved with producing the Google Search Appliance so we can concentrate on our core business—producing our search engine software."

With help from the Dell OEM group, the Google team standardized on 11th-generation Dell PowerEdge R710 servers with the Intel® Xeon® processor 5500 series for its GB-7007 appliance and a new GB-9009 model; the latter also incorporates a Dell PowerVault™ MD1000 array for additional storage capacity. "The 11th-generation Dell PowerEdge servers provide a strong price/performance ratio," says Frank Kull, head of enterprise manufacturing at Google. "With the Dell PowerEdge R710 server, we can give our customers the search performance they need while keeping our product prices competitive." Adds Mistry, "We were very proud to be the first Dell partner to integrate 11th-generation servers into a product line. Potential customers could clearly see our dedication to using cutting-edge technology in our appliances."

Dell's rigorous component testing, strong engineering support, and manufacturing process controls offer high levels of quality and reliability—including reducing hardware-related returns by approximately four times compared with Google's previous hardware vendor. Dell also provides all in-field hardware support for the appliances.

The Google team is quick to note that Dell is much more than a hardware vendor. "By working with Dell, we have significantly reduced the time, resources, and costs required for managing hardware design, branding, software installation, supply chain logistics, worldwide distribution, and replacement service," says Kull. "We can keep our staff small and concentrate on enhancing our search technology."

Having Dell as an OEM partner has helped Google cut costs on multiple fronts, including virtually eliminating inventory-carrying costs. As the market for in-house search technology grows, the Dell OEM group can help Google scale its enterprise business easily and cost-effectively. "We can deliver familiar and effective Google searches in a reliable, high-performance appliance, and we can quickly increase production, shipping, and support for global customers without having to make major changes or investments in our own enterprise," says Mistry. "With Dell, we have a strong partner that can help us retain a competitive edge in a growing market." EE



PACCAR

DRIVING INNOVATION

When Dell helped global technology leader PACCAR develop and implement a comprehensive plan for IT simplification, the resulting virtualized infrastructure accelerated IT responsiveness to business needs, reduced server total cost of ownership by approximately 50 percent, and paid for itself within two years.

Founded in 1905 as a railway and logging equipment manufacturer, today PACCAR is a US$17 billion global business that manufactures premier truck brands—including Kenworth, Peterbilt, and DAF—in addition to providing customized financial services, aftermarket parts, and customer support. To differentiate itself from competitors, PACCAR has integrated a diverse array of technologies into its operations. But after years of rapid IT growth, its infrastructure had become large, complex, and costly to manage.

To streamline operations and enable the IT group to focus on innovation, PACCAR asked Dell Services to help develop a comprehensive plan for IT simplification. "Dell is much more than just a hardware vendor," says Rob Branson, director of the PACCAR infrastructure technology team. "The Dell team understands our business and our goals."

An initial assessment showed that PACCAR's application servers were underutilized. "We knew that server consolidation would have a very positive impact on our cost structure by reducing equipment and operating costs and enhancing administrative productivity, allowing us to shift resources to new initiatives," says Branson.

The Dell team helped PACCAR develop and implement an Efficient Enterprise strategy based on VMware® virtualization, Dell™ PowerEdge™ servers, and Dell/EMC storage area networks (SANs). "Working with a single vendor greatly simplified acquisition and deployment of our new infrastructure, plus on an ongoing basis, it simplifies support," says Kyle Quinn, CIO and GM of PACCAR.

The PowerEdge servers provide the value, performance, and reliability for an effective virtualized environment. "Our experience with Dell servers has been extremely positive," says Branson. "After running several hundred virtual machines on the Dell servers, we have not had a single hardware-related outage in two years." Virtualization has helped reduce the total number of servers by approximately 50 percent while accelerating provisioning times from 30 days to just a few minutes—helping the business grow and adapt quickly to changing conditions.

"Virtualization has helped us dramatically simplify our IT infrastructure and enhance IT flexibility," says Branson. "We now have fewer servers to manage and maintain, and VMware tools have further improved the productivity of our staff. We now can get more work done with less cost, and we have shifted resources to focus on business goals." Multiple Dell/EMC SANs support the virtualized servers, helping to simplify storage management while reducing recovery times from up to five hours to about 20 minutes.

The consolidated infrastructure has significantly reduced total cost of ownership: Branson estimates that the cost of a virtual server is less than half that of a physical server. "The new virtualized environment based on Dell servers has paid for itself within the first two years," he says.

Ultimately, the simplification project has better positioned PACCAR to apply innovative technologies to the needs of the business. "This is a competitive business, and IT is an important element of the company's performance," says Nick Eshkenazi, PACCAR's senior director of global technology and architecture. "Dell helped us build a simplified yet flexible IT foundation that will drive innovation throughout the business for years to come."

7-ELEVEN

SIX BILLION SLURPEES AND COUNTING

Adopting an automated, services-based approach to support its mobile workforce helped 7-Eleven lower IT management costs by 81 percent, reduce help-desk incidents by 67 percent, and increase user productivity by 30 percent.

7-Eleven, Inc., started out as an ice house in 1927 and has grown into the world's largest operator, franchisor, and licensor of convenience stores. A vital link in the company's marketing structure are 800 field consultants who work closely with individual store operators to implement corporate and merchandising strategies and introduce new products. When they and 2,000 employees in remote offices were due for a hardware refresh of their existing Dell™ systems, 7-Eleven provisioned Dell Latitude™ D630 laptops with Intel® Core™2 Duo T7500 processors, AT&T Built-In Mobile Broadband cards, and wireless modems.

The enhanced mobility provided by these laptops introduced some management challenges, however. The company had been using a third-party device manager that required end users to manually accept software installations, and was operated by a staff of 16 technicians along with a help desk of remote contractors. Usability problems led to more than 8,000 help-desk calls per month, while limited bandwidth meant that technicians had to plan months in advance to send out a patch. In addition, users would often install unauthorized software—sometimes disabling legitimate functionality and leading to additional help-desk calls. The time and money spent handling these difficulties consumed valuable resources that could have been invested elsewhere in the business.

Dell Distributed Device Management Services, part of the Dell ProManage™ suite, helped 7-Eleven overcome these inefficiencies. This software-as-a-service (SaaS) approach allows organizations to track dispersed assets, distribute software, and deploy patches regardless of client location, and is managed off-site by a Dell team. Immediately, 7-Eleven's staff of 16 technicians was reduced to 3—an 81 percent drop in IT management costs.

7-Eleven also opted for a Dell ProManage help-desk solution, but the help desk has little to do. "We've had a 67 percent drop in incidents because of the new Dell Latitude D630 laptops, the silent installation technology of Dell Distributed Device Management Services, and our control over what users can put on their computers," says Brian Cator, senior director of IT at 7-Eleven. "Service is better as well. Many of our calls are now 'single-shot' calls, which means they can be resolved on the spot."

The company also knows that it can now deploy patches within 24–48 hours. "All our laptop software is patched as needed," says Cator. "And with up-to-date software, fewer incidents, and better compliance, our user base is 30 percent more productive." And because the traffic goes through the Dell network, 7-Eleven's bandwidth can now be used for other tasks important to the business, helping further increase productivity.

7-Eleven was impressed with how quickly Dell was able to roll out the solution. "We were able to go from zero to full deployment very, very quickly," says Cator. "The other thing that impresses me about the Dell solution is the scalability. I have no doubt that if I call Dell and say 'Roll this out to another 2,000 users,' Dell would be able to do that very quickly. I simply have not seen Dell's speed and agility with any other vendor." EE

FROM THIS POINT ON,

81 AND 67 ARE THE BIG NUMBERS AT 7-ELEVEN.

81% reduction in IT management costs. 67% decrease in help-desk requests. And 30 percent more productivity for the folks who bring you the Slurpee.® Now that's a refreshing improvement. Just one of the ways 7-Eleven® achieves efficiency with Dell.

The Efficient Enterprise runs on Dell.
See the numbers @ dell.com/efficiency

BETFAIR

STANDARDIZED SYSTEMS PAY OFF

When Betfair, a leading UK-based betting company, rolled out latest-generation Dell™ systems with the Microsoft® Windows® 7 and Windows Server® 2008 R2 operating systems, it saw performance increases of up to 20 percent along with significant energy savings, streamlined management, and enhanced security.

As the UK-based owner of the world's largest betting community, Betfair processes six million transactions a day—more than the combined total of the European stock markets. Because every element of the business directly or indirectly supports the Betfair Web site, the company needs a highly available, stable IT infrastructure. And because the IT team supports 1,500 end users and needs time to develop new services, the more reliable the infrastructure, the freer they are to innovate.

When Microsoft released beta versions of Windows 7 and Windows Server 2008 R2 Enterprise, the Betfair IT team saw an opportunity to increase application performance, enhance energy efficiency and security, and simplify maintenance to help improve the business. The team first installed Windows Server 2008 R2 on existing Dell PowerEdge™ servers as a pilot, then upgraded the servers to optimize performance and efficiency. Similarly, the team plans to refresh client systems using Dell Latitude™ E4300 and Latitude E6400 laptops with Intel® Core™2 Duo processors as well as Dell OptiPlex™ 960 desktops with Intel Core 2 Quad processors. Features like Intel vPro™ technology help simplify and streamline remote management, while built-in disk encryption helps eliminate the overhead of a third-party security solution.

The IT team rolled out this Efficient Enterprise solution in phases, ultimately taking advantage of automation in Microsoft System Center Configuration Manager 2007 to complete each migration in just 40 minutes. Simultaneously, they deployed 120 PowerEdge R610 servers with Intel Xeon E5502 processors. "The deployment and migration process went perfectly," says Ian Burgess, head of Microsoft and data center platforms at Betfair. "Whenever we needed information or had an issue, Dell consultants responded within 24 hours with a resolution—whether that was a code, a driver, an answer from a Microsoft expert, or the name of a Microsoft program manager who we could go to for help. That's the beauty of partnering with Dell."

The improved performance will boost productivity for both the IT team and end users. "Our benchmarking tests revealed an improvement in performance of up to 20 percent when running a workflow using Windows 7," says Burgess. "We're also seeing 10 percent fewer incidents, quicker application launch, and faster completion of core tasks within applications."

Betfair had been running Microsoft Hyper-V™ virtualization for several months, and now the upgrade has consolidated this environment to help increase uptime and dramatically reduce energy use. "One of our Hyper-V clusters has four nodes with capacity to spare, whereas before there were seven nodes at full capacity," Burgess says. "That equates to a massive energy saving across our data centers." Dell Energy Smart technology and the upgraded software help further reduce energy use: the PowerEdge R610 servers provide eight times the performance per watt of the company's previous PowerEdge servers.

Betfair has also worked with Dell to migrate to Microsoft Exchange Server 2010 and Microsoft Office 2010 Professional. Says Burgess, "By working with Dell and Microsoft to implement emerging technology, we know that we're making the most of our investments, supported by expertise that complements our own."

EMERSON

A RADICAL REMODEL

Through a strategy of standardization and virtualization on Dell™ PowerEdge™ blade servers, Emerson consolidated from 135 data centers to just 4—improving energy efficiency by 31 percent and dramatically reducing total cost of ownership while creating a framework for business innovation and growth.

Emerson is a leader in developing technology to make data centers operate more efficiently. But when the Emerson IT team evaluated its own infrastructure, it found that it could not support the high service levels, interconnectedness, and quick response times required for future growth.

Rather than spending resources on upgrading diverse systems at approximately 135 data centers around the world, Emerson decided to transition to the Efficient Enterprise model. By focusing on standardization and simplification through virtualization, the company was able to consolidate down to just 4 highly capable facilities. "We adopted a strategy of creating a very strong core of virtualized computing resources, a private cloud that over time everyone in the company would leverage," says Steve Hassell, vice president and CIO at Emerson.

Emerson selected high-performance Dell PowerEdge M610 and PowerEdge M710 blade servers with the Intel® Xeon® processor 5500 series to power all of the company's standard x86 platform–based systems, along with a Dell/EMC CX4-960 storage area network (SAN) to dynamically manage storage resources.

The virtualized Dell systems will result in an 18:1 ratio of virtual to physical servers, according to the Emerson IT team. "We have more than 6,000 x86 servers across Emerson, and about 3,800 of them are good candidates for the virtualized environment," says Hassell. "Those 3,800 physical servers will be consolidated down to a little over 200 new, more powerful Dell servers that are capable of delivering worldwide IT services for the entire company."

Emerson calculates that the initiative will reduce the server footprint by 50 percent compared with its previous rack servers, and enable the consolidated data centers to last at least twice as long before running out of space. The new global production data center is 31 percent more energy efficient than traditional data centers while providing an anticipated 99.982 percent uptime—ultimately contributing to the company's productivity and its bottom line. And with deployment times for new servers and applications reduced from weeks to hours, the IT team can help internal customers respond quickly to new business opportunities.

By standardizing on Dell servers, Emerson projects significantly reduced operating costs as well. "With far less physical equipment to manage, our total cost of ownership is much lower," says Hassell. "Standardizing on Dell is also a big cost saver because having a common infrastructure allows us to simplify administration and training." The IT team also estimates that 2010 operating costs for its Microsoft® Windows® server environment will be 15 percent lower than they would be using different hardware.

Hassell credits Dell with helping build a powerful, efficient IT infrastructure that will take Emerson into the future. Says Hassell, "The scope of our virtualization and consolidation project gave us the opportunity to step back and find the best, most innovative technology to achieve the company's overall business strategies and goals. For us, that technology was Dell. We believe in meeting the future with innovation, and Dell is a great fit for us because they're an innovation leader in computing platforms." EE

AECOM

EFFICIENT STORAGE PAVES THE WAY

To help AECOM Asia overcome the twin challenges of rapid data growth and legacy manual processes, Dell ProConsult implemented a tiered, end-to-end archiving and disaster recovery solution that optimized the company's storage and laid the foundation for an efficient virtualized infrastructure.

Established in Hong Kong and later merged with AECOM in the United States, AECOM's Asia arm provides technical and management support services to a broad range of industries. Faced with rapid data growth from its expanding business, the company found that its reliance on manual processes and paper-based plans, drawings, and other information had left it struggling with backup, archiving, and disaster recovery.

When AECOM Asia approached Dell with these challenges, the Dell ProConsult team proposed and delivered an end-to-end archiving and disaster recovery solution designed for maximum return on investment (ROI). "The consultants were very detailed and confident in their recommendations; they truly cared about coming up with the best solution for AECOM," says Christine Cheung, director of IT for AECOM Asia.

The first phase of the Dell plan was to implement an archiving solution based on Symantec™ Enterprise Vault™ and EMC® Centera® software. Tiered storage helped to reclaim primary storage area network (SAN) capacity and reduce both backup time and the overall recovery window. "We have managed to reduce data backup time by up to two hours with the Dell solution," says Cheung. Single-instance storage capabilities help eliminate duplication and ensure efficient resource utilization. Dell™ PowerEdge™ servers with Intel® Xeon® processors along with Dell PowerVault™ MD1000 arrays support file and e-mail archiving systems.

The second phase centered on strategic disaster recovery using Symantec's Veritas™ Volume Replicator, Veritas Cluster Server, and Veritas Storage Foundation™ software alongside Dell/EMC SAN arrays and PowerVault TL4000 tape libraries. This robust solution offers automated application recovery and real-time data protection to help avoid data loss and downtime, while the highly available Dell/EMC arrays support an expanding Internet SCSI (iSCSI) SAN—helping ensure that AECOM Asia employees can maintain access to critical systems even in the event of a disaster. Dell also plans to deploy a document management system to digitize AECOM Asia's manual processes.

Next, the company is seeking to virtualize its data centers, which Cheung expects to provide a high ROI—including reducing data center costs from US$106,000 to US$12,000 over three years and reducing total cost of ownership from US$143,000 to US$98,000. "Dell consultants estimate a high rate of return for us with virtualization," says Cheung. "In terms of ROI, we can expect to recover 50 percent of our investment in virtualization within three years, not to mention the numerous nonmonetary benefits of virtualization." Using efficient, virtualization-ready PowerEdge servers, AECOM Asia also projects that this infrastructure will help reduce energy use by 30 percent.

Dell engineers were on hand to support the deployment and share their expertise with the AECOM Asia IT team, helping simplify solution deployment for AECOM Asia. "The Dell consultants we worked with did not treat this as a simple transactional sale," says Cheung. "They went the extra mile to build a long-term relationship with us." As the partnership with Dell continues to grow, AECOM Asia is confident that these Efficient Enterprise solutions will provide the company with a lasting competitive advantage.

FROM THIS POINT ON,

RACKSPACE HAS 630,000 MORE MINUTES A DAY TO INNOVATE.

Every day, Rackspace® Hosting manages over 42,000 devices globally. Dell ProSupport™ helped Rackspace save 15 minutes of management time per day per device, freeing up time for innovation. Rackspace has become an Efficient Enterprise. Have you?

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MIGRATE TO WINDOWS 7 WITH 88% LESS EFFORT.

Dell Automated Deployment makes for a smoother, trouble-free, and remarkably fast deployment of Windows® 7 across your enterprise. With deskside technician time reduced by up to 88%. Dell has a comprehensive understanding of Windows 7 and the technology and services to make it happen fast. Deploy efficiently with Dell.

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