

Efficient Enterprise

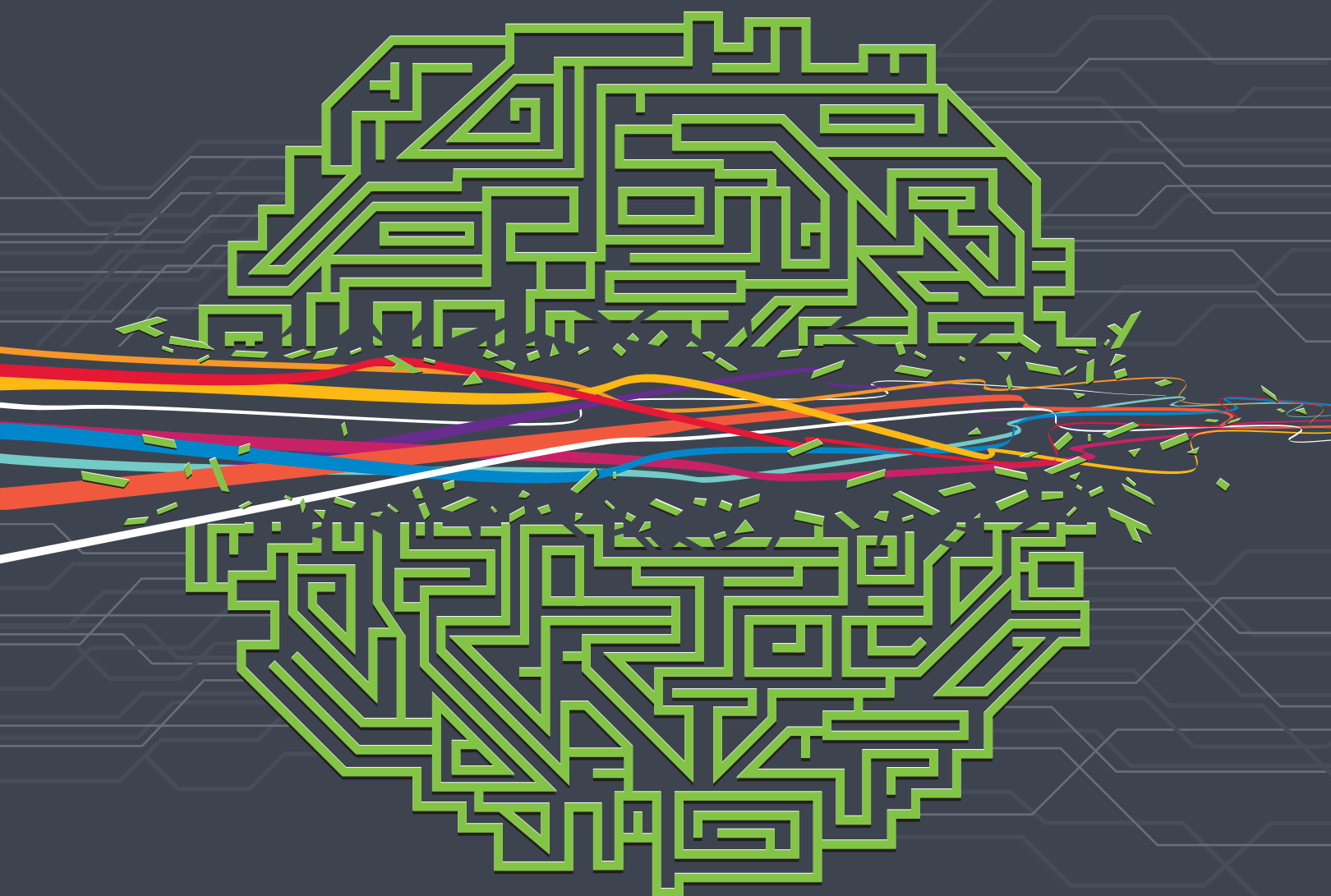
Dell Power Solutions special edition

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2011 Issue

Efficiency breakthrough

*Flexible IT options accelerate business agility and innovation—
with a convincing return on your technology investment*



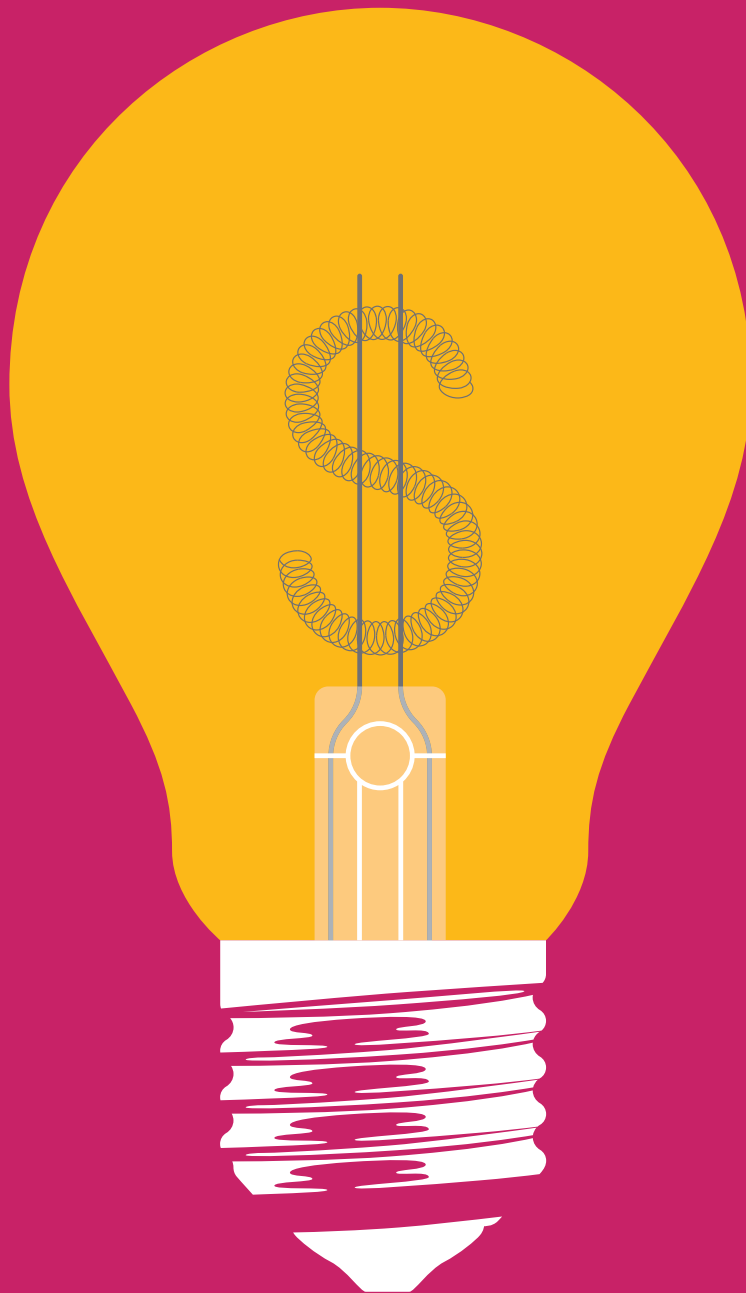
➔ Cover story: Enterprise efficiency redefined in the Virtual Era

➔ Executive Q&A: Dell CIO Robin Johnson and CFO Brian Gladden

➔ Measuring IT: A calculated approach with the Dell IT Efficiency Model

➔ Beyond virtualization: The ongoing shift to cloud computing





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The power to do more

Efficient Enterprise

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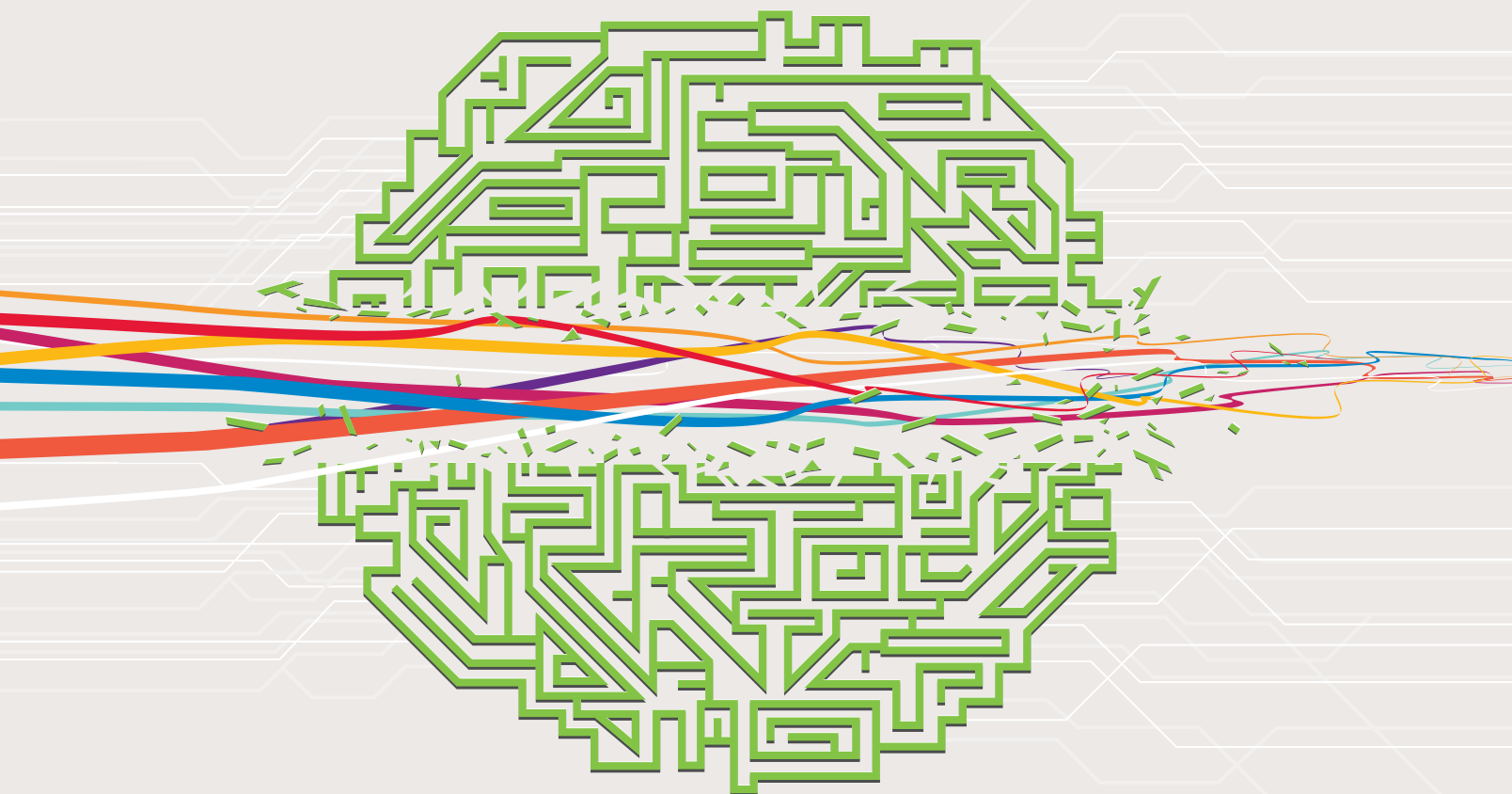
2011 Issue

4 cover story

Efficiency breakthrough

By Jeff S. Johnson and Kathy Karpinski

IT flexibility is a must to prosper in the Virtual Era. By boosting organizational efficiency across people, processes, and technology, the Efficient Enterprise accelerates business agility and innovation—while protecting current technology investments.



15 How does your IT measure up?

Efficiency is a key differentiator in well-managed organizations. But traditional metrics often fail to look beyond cost savings. The Dell™ IT Efficiency Model (ITEM) offers a highly sophisticated approach to help assess IT efficiency and effectiveness.



10

Executive Q&A: Common ground

With more than half of its IT budget now focused on innovation, Dell is using technology to fuel global growth. Dell CIO Robin Johnson (left) and CFO Brian Gladden talk about how the rapport between IT and Finance helped turn Dell into an Efficient Enterprise.



3

Unleash the power to do more

By Steve Schuckenbrock

Partner perspective

18

Intel's vision for the ongoing shift to cloud computing

Cloud computing promises large gains in efficiency and flexibility at a time when demands on data centers are growing exponentially. Intel's vision for the future of this technology focuses on key principles to make the vision a reality.



Customer perspectives

20

MGM Resorts International: Betting on innovation

MGM Resorts International consolidates on virtualized Dell PowerEdge™ blade servers to automate its infrastructure, streamline deployment and management, and enable IT personnel to focus on strategic innovation.

22

Salesforce.com: Building a scalable cloud

By migrating its databases to standards-based Dell PowerEdge servers, cloud computing leader salesforce.com achieves cost-effective scalability and doubles performance while dramatically reducing costs.

24

Carnival Cruise Lines: Serious fun

Deploying virtualized Dell PowerEdge servers and EqualLogic™ storage helps Carnival Cruise Lines make the most of a small shipboard footprint, maximize reliability, and reclaim 7,000 hours per year for its information systems managers.

Index to advertisers

Broadcom Corporation	23
Dell Inc.	C2, 13, C3
Dell Inc. and Microsoft Corporation.....	C4
Intel Corporation	21
Microsoft Corporation	17



Efficient Enterprise

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2011 Issue

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Unleash the power to do more

Are you getting your share of the US\$200 billion in efficiency-led savings available for IT organizations? That's what Dell believes is on the table for the taking.

I was a CIO for many years, and understand the conflicting needs for new IT services that power the organization and the pervasive need to cut expenses. At Dell we have done both—and this *Efficient Enterprise* special edition of *Dell Power Solutions Magazine* is all about helping you transform IT and redirect resources to innovation. It's about getting a lot more for less.

For example, we have designed a new class of infrastructure—hardware and software—that simplifies data center management, automates common tasks, and helps you take advantage of advances in virtualization and cloud computing. The Dell™ Virtual Integrated System (VIS) uniquely addresses the people and processes needed to efficiently operate a data center. For instance, an application programmer—rather than having to request resources from separate server, storage, and networking teams—can go to a single tool and search from a preloaded, approved catalog of resources to find a workload similar to the desired workload. After a couple of clicks, the infrastructure is automatically provisioned—a process that takes minutes instead of weeks. VIS can then monitor that workload to help ensure the provisioned infrastructure is sufficient, or automatically redeploy the workload if needed.

VIS is a powerful tool for increasing enterprise efficiency, and it works with the data center investments you have already made. That's something unique with Dell, and it's at the heart of all our Efficient Enterprise solutions. Rather than locking you into a singular path and requiring all



new hardware, Dell helps you work with what you already have (Dell and non-Dell) to deliver needed results today, while still providing an open, capable, and affordable platform for the future.

I personally want to share this special edition, and what Dell is doing to help you transform your operations to redirect resources to innovation. We have used this same strategy in our own IT infrastructure and with thousands of our customers worldwide. Break down silos, manage resources as a single pool, leverage the efficiencies offered in the cloud, and get your share of the US\$200 billion. Read about it and call us so we can collectively roll up our sleeves and get started.

Respectfully yours,

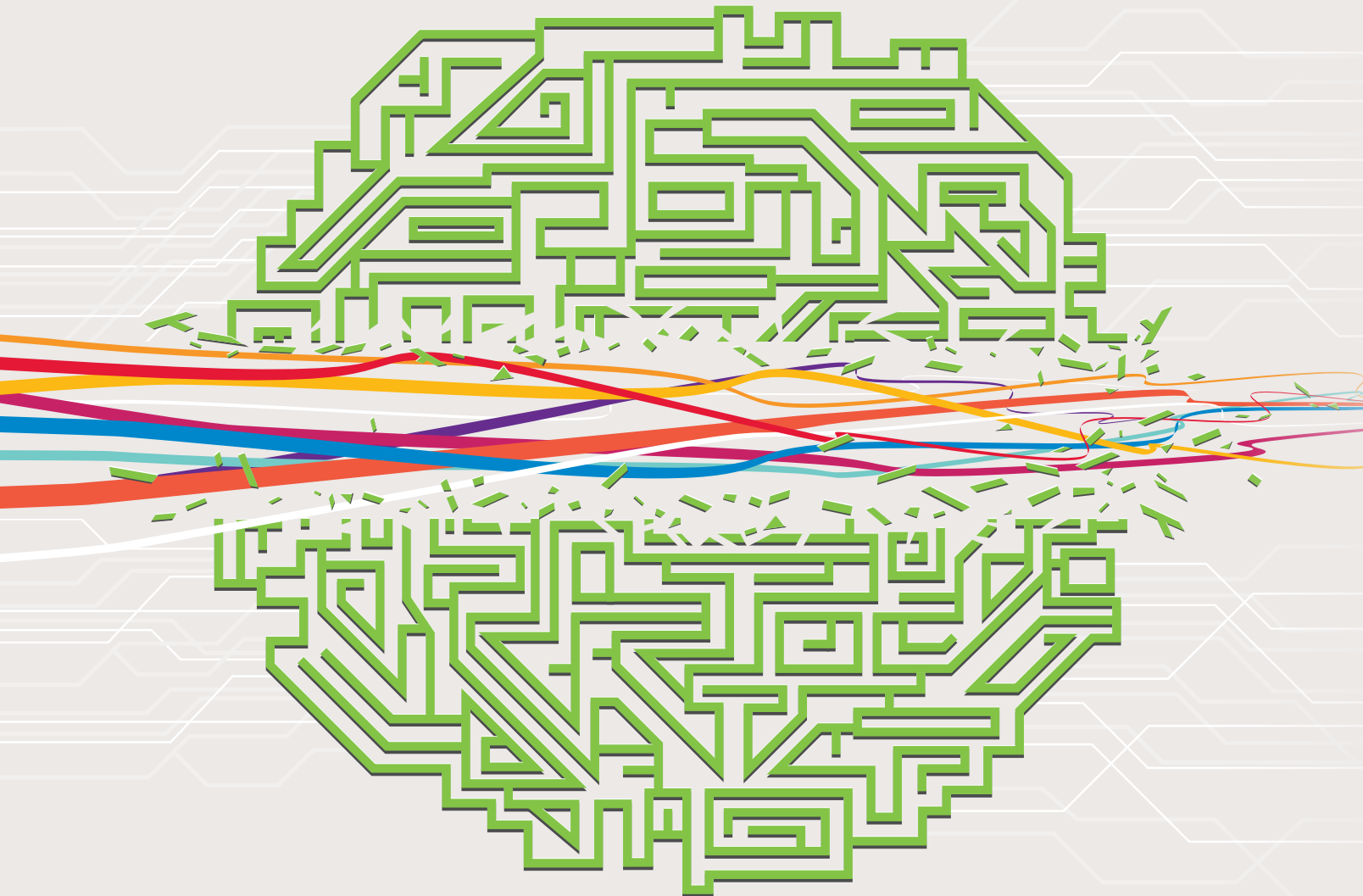
Steve Schuckenbrock
 President, Large Enterprise
 Dell



Efficiency breakthrough

By Jeff S. Johnson and Kathy Karpinski

IT flexibility is a must to prosper in the Virtual Era. By boosting organizational efficiency across people, processes, and technology, the Efficient Enterprise accelerates business agility and innovation—while protecting current technology investments.



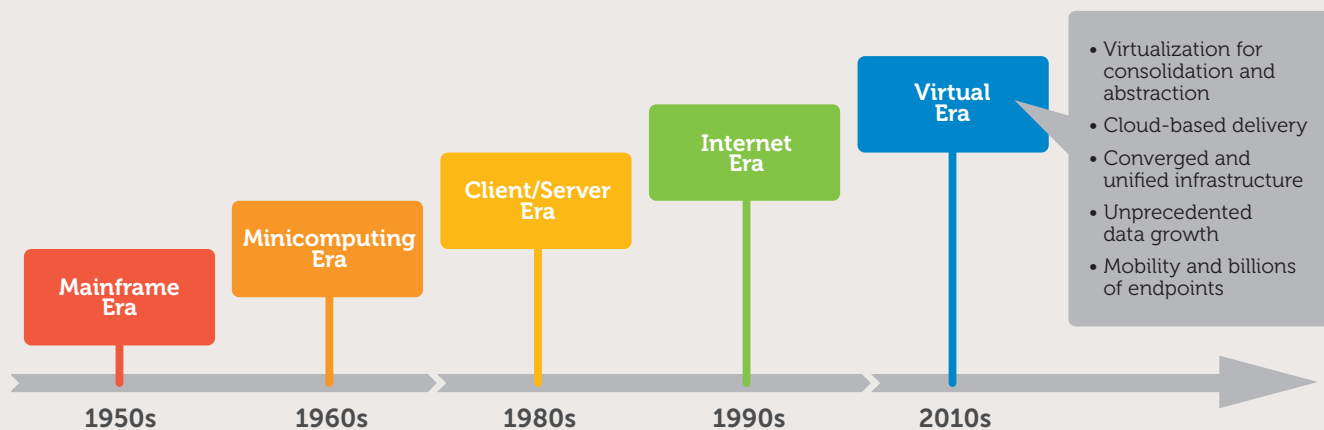


Figure 1. The evolution of computing technology, culminating in the Virtual Era

Welcome to the Virtual Era—an era defined by the global, 24/7, always-connected, data-driven world. The demand for anytime, anywhere access to information has led to the massive growth of digital content and delivery systems, placing unprecedented demands on the people, processes, and technology tasked with making digital dreams a reality. Businesses are being hit by nothing less than a data tsunami even as they contend with a seemingly endless array of new user endpoints and increasingly sophisticated requirements to support digital-savvy workers.

But dealing with these challenges is just the beginning. While the computing journey since the birth of the mainframe in the 1950s has been punctuated by a series of paradigm shifts—including the progression through the minicomputing, client/server, and Internet eras—the onset of the Virtual Era also introduces a fundamental change in the posture of IT in most organizations (see Figure 1). Given its pivotal role in advancing enterprise-wide management and process efficiencies, IT is no longer viewed as a

necessary cost center; rather, it is a full partner in driving business strategy and competitive differentiation. At the same time, many companies have tightened their belts and cut spending, and IT organizations have not been immune to these cuts. Although it is cliché to say that businesses must “do more with less,” the statement could not be more accurate.

So in an era of flat budgets, how can IT decision makers cope with the explosion in technology demands? How can they transform IT from a cost center to a value center? And how can they successfully find their way to the optimum set of digital assets—and the budget—that will allow them to accelerate business agility and innovation?

The Efficient Enterprise: A \$200 billion opportunity

The answer lies in increasing IT efficiency—reengineering the organization into an Efficient Enterprise. It starts by challenging how IT budgets are spent. Today, of the annual US\$1.2 trillion in estimated IT infrastructure-related spending worldwide, around 80 percent is spent on maintenance. Only 20 percent is spent

on the innovation that is essential to align IT with business objectives and gain breakthrough competitive advantages in the Virtual Era.

Increasing IT efficiency enables organizations to allocate a larger percentage of the budget to innovation. As a result, CIOs can redirect their limited IT budgets away from maintenance, or simply “keeping the lights on,” and toward investments that grow top-line sales and revenue. Dell believes that companies should aim for reducing the percentage spent on maintenance from 80 percent to 50 percent, and that there is US\$200 billion in efficiency-led savings available for the taking.

Although the Virtual Era has indeed challenged IT organizations to deliver much more with much less, it has also ushered in transformative solutions. Dell has worked with thousands of organizations and the largest of hyperscale Web providers to understand the issues CIOs and IT organizations are facing—and has used that knowledge to design solutions that harness technology and address the people and processes needed to deliver unprecedented IT efficiency.



A flexible framework for responsive IT

Organizations can position themselves to take advantage of Virtual Era advances by focusing on ways to make their IT infrastructures more responsive to changing business needs. The Efficient Enterprise framework includes three key steps to help increase IT efficiency and business agility:

1. **Standardize:** Disparate, proprietary, and legacy systems can bog down operational efficiency. Migrating to standards-based components, common platforms, open tools, and a unified fabric helps to reduce complexity and optimize the data center infrastructure already in place.
2. **Simplify:** Through pragmatic solutions like virtualization and storage consolidation, organizations can consolidate or eliminate redundancies to help get the most out of the infrastructure. And by rationalizing and reducing the application space, they can gain the flexibility to easily remove and repurpose servers for other uses.
3. **Automate:** Once a uniform environment with fewer touch points is in place, increased levels of automation become possible. The right tools and operational best practices help reduce manual intervention and boost productivity.

Having rationalized the infrastructure, organizations can now determine where to best leverage services.

Dell has already gained from the benefits of this approach. The company has successfully allocated 50 percent of its IT budget toward innovation, consolidated servers by ratios of up to 30:1, virtualized over 8,000 servers, and eliminated 6,000 physical servers. Implementing the Efficient Enterprise framework at Dell has resulted in more than US\$100 million in savings over just two years.

Efficient solutions for the data center, workforce, and cloud

The Efficient Enterprise strategy breaks down into three areas of focus: the Efficient Data Center, the Efficient Workforce, and the Efficient Cloud. Dell has applied a framework to each area that provides a starting point for organizations to begin their Efficient Enterprise journey.

The Efficient Data Center

The data center is the heart of the IT organization—and it has a tremendous impact on overall enterprise efficiency. Large Web companies are developing the most efficient data centers today and reframing what is

possible. Take a look at one metric: the people needed to manage server farms. Now, imagine a world where one administrator could easily manage 3,000 servers instead of the 300 or so common today. There is no RISC architecture here: this level of efficiency is gained by standardizing on x86-based hardware, automating tasks, and running applications that build system resiliency into the software so that cost-effective, nonredundant hardware is easily hot-swapped when faults occur. Fewer people working automated processes is a lesson learned from hyperscale, cloud-based organizations that have already made these types of efficiencies a reality.

Every IT organization is different, but the majority have significant investments in existing infrastructures that need to be utilized on the journey to greater efficiency. What these organizations need are workload, management, and infrastructure solutions that increase the efficiency of existing data centers as well as the processes and people that run them (see Figure 2). Organizations building new data centers can leapfrog to hyperscale efficiency with purpose-built Web applications and technology. However, most organizations require an open, evolutionary approach that can generate substantial efficiency gains from

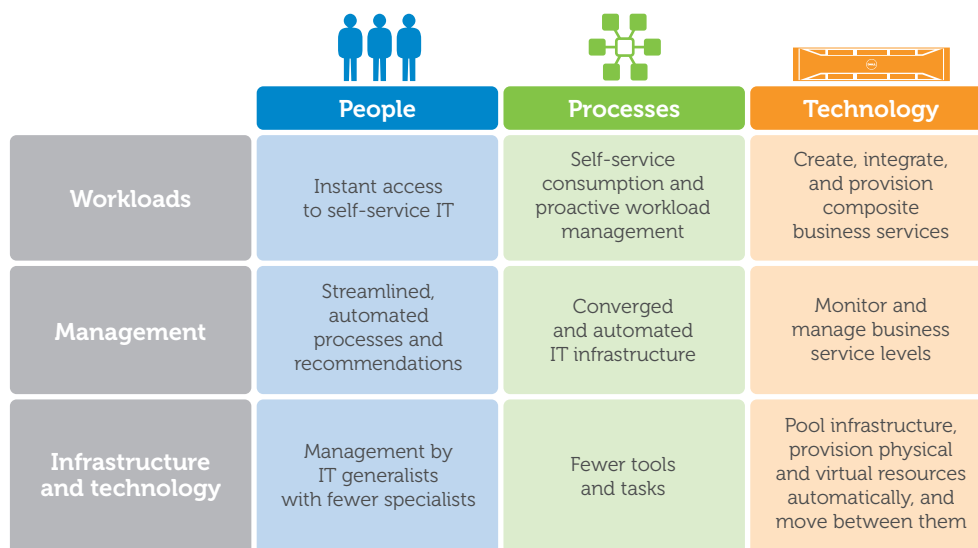


Figure 2. Dell's solutions for the Efficient Enterprise, encompassing people, processes, and technology

an existing heterogeneous infrastructure, enabling improvements to move forward on a timetable and investment schedule that meets their needs.

The ultimate goal is to build an intelligent and automated infrastructure that reduces tasks and manual processes, and is managed more by policy than by people. For the past few years, Dell has been working with some of the world's largest cloud-based enterprises, including salesforce.com and RackSpace. More than one billion people a day now connect using Dell™ cloud solutions. Dell has learned a lot from these engagements—and has been developing ways to help organizations transition from a traditional IT architecture to hyperscale-like efficiencies. The resulting strategy is based on four key building blocks designed to meet today's needs while providing a flexible platform for future growth:

- **Intelligent foundation:** Create a foundation of servers, storage, and network fabrics including next-generation data center platforms such as Dell PowerEdge™ M-Series blade servers, purpose-built PowerEdge C-Series servers, and rack-dense servers; intelligent data management using Dell EqualLogic™ storage; and Dell PowerConnect™ networking. (For more information on the role of storage in the Efficient Data Center, see the "Tackling unwieldy data volumes with efficient storage" sidebar.)
- **Virtualization:** Aim to virtualize more than 50 percent of organizational workloads to serve as the foundation for a private cloud, deploy Internet SCSI (iSCSI)-based tiered storage that matches availability needs with the cost of storage media, and utilize solid-state memory to drive efficiency.
- **Converged and unified infrastructure:** Eliminate operational or technology silos from the infrastructure to accelerate time to business impact and simplify management of—and movement of

Tackling unwieldy data volumes with efficient storage

Dell EqualLogic PS Series storage area network (SAN) arrays help address exponential data growth in a cost-effective way through virtualization technologies designed to increase performance and automate data protection. EqualLogic arrays can be installed and configured in just a few hours. The included EqualLogic software offers outstanding control over storage and labor costs by delivering comprehensive deployment, management, and data protection capabilities along with application-layer integration with leading-edge database and virtualization platforms. The peer storage architecture at the heart of EqualLogic PS Series SANs enables out-of-the-box automation of numerous administrative tasks—helping free staff time for strategic IT innovation, competitive differentiation, and business growth. For more information on efficient storage, visit dell.com/equallogic.

applications and workloads between—physical and virtual environments.

- **Cloud-based delivery:** Incorporate end-user self-service, consumption-based billing, fast and frictionless IT delivery, and variable operational expenses.

These building blocks are incorporated into the Dell Virtual Integrated System (VIS), which is designed to provide an open, cross-vendor data center platform that boosts IT efficiency in the Virtual Era. This approach allows server, storage, and networking assets to be managed in a common resource pool with common tools, enabling IT managers to provision and automate infrastructure management at every layer—physical or virtual, using any leading hypervisor.

VIS uniquely addresses the people and processes needed to efficiently operate the technology. For example, rather than having to request resources from separate server, storage, and networking teams, an application programmer looking to set up a test environment can select options from a catalog of available resources. Using VIS, the programmer can go to one tool and find a workload similar to the desired workload. After a couple of clicks, the infrastructure

is automatically provisioned—a process that takes minutes instead of weeks. VIS can then monitor that workload to help ensure that the provisioned infrastructure is sufficient to the task and meets the service-level agreement, and that it is not overprovisioned. If it is overprovisioned, the resources can be automatically recaptured and redeployed for other purposes. That's a very effective set of tools for driving down the evolutionary path toward data center efficiency, and it is designed to work with the data center investments that an organization has already made—in both Dell and non-Dell equipment.

At Dell, data center efficiency in the Virtual Era will be defined by driving open systems, like VIS, that preserve choice and drive capability at every layer of the architecture. This approach enables innovation, quality, and price to all work toward competitive advantage.

The Efficient Workforce

In the Virtual Era, mobile workers demand easy-to-use ways to stay connected and productive. New employees are apt to be digital-savvy, and may resent limitations on the applications that they use every day in



Virtualization and the cloud

In this video, technical officers and executives from a range of companies share how Dell virtualization technology and cloud computing have helped them dramatically reduce costs, simplify deployment and management, and get the most out of their infrastructure.

[youtube.com/
watch?v=gqhFydTRxiU](http://youtube.com/watch?v=gqhFydTRxiU)

their personal lives. IT organizations, on the other hand, must cope with thousands of constantly evolving endpoint devices while protecting enterprise data. From PCs and tablets to RFID name tags and inventory labels, everything will have an IP address. Managing, tracking, updating, and providing applications and data to these devices is a potential nightmare for IT organizations—yet expected by end users.

Although many companies have experimented with allowing employees to use their devices of choice, these experiments typically result in environments that are too complex to maintain. One approach that is gaining favor restricts the options to a manageable number of endpoints, and implements desktop virtualization to allow device partitioning for user and company applications. Workers can then use the applications and entertainment services they want in their personal partitions, while the organization can provide a consistent image with access to data residing on enterprise servers.

Building the foundation for an Efficient Workforce requires three key steps:

- **Match the correct technology to the appropriate user class:** No single technology can best enable a workforce. Organizations must identify their different function and user groups, and then select technologies designed to meet their particular needs.
- **Investigate alternative computing architectures:** Recent technologies such as desktop virtualization and cloud computing can offer effective ways to support how employees are using technology today while still protecting enterprise data.
- **Centralize the management of client infrastructure:** A centralized method of accessing and tracking assets can keep users up and running while helping to protect them against data loss and security threats.

Dell is at the forefront of client technologies, and Dell Services can help organizations plan and implement Efficient

Workforce solutions. As one example, Dell Services can help organizations carry out a migration to the Microsoft® Windows® 7 OS so that they can take advantage of its enhanced remote manageability, security, unified communications, and overall integration with the IT framework—helping to mitigate the risk and expense of downtime for mobile workers, significantly reduce support costs, and simplify client management.

The Efficient Cloud

Responding to Virtual Era opportunities and challenges requires highly scalable, dynamic, virtualized IT operations. The IT department must be a nimble service provider to the business as well as a strategic partner. In an era when users can provision servers outside the organization in minutes using credit cards, IT must become agile—able to scale up and down and provision capabilities on demand. Embracing cloud solutions can help increase IT responsiveness and efficiency while enabling new models for delivering traditional IT workloads and minimizing capital expenditures.

Software as a service (SaaS), a class of cloud solutions, can help immediately solve targeted IT problems like e-mail archiving and remote client management. SaaS solutions help to free IT from daily operational headaches and can be up and running in as little as a day, often with greater reliability and resiliency when compared with in-house solutions.

For organizations building Web applications, traditional development tools are being replaced by tools that address the demands of Web-based software. “Cloud in a box” platform solutions—also called platform as a service (PaaS)—can scale on demand and help meet performance and bandwidth requirements. These solutions are well suited for Web 2.0 and e-commerce environments as well as telecommunications and large service providers.

Dell has spent years collaborating with cloud leaders to provide best-of-breed cloud hardware. These designs are extensible and support both public and private cloud deployments. Custom-built cloud servers offer an optimized combination

of density, memory, and serviceability while helping save on power, space, and maintenance costs. Additional solutions are also available to help meet the graphics, storage, and networking challenges of Web 2.0 content delivery. Dell and Microsoft have also recently announced a strategic partnership that includes developing and deploying an appliance based on the Windows Azure™ cloud platform, enabling organizations to deploy their own private clouds.¹

Dell Services can help at any point along the transition to cloud computing. As a starting point, organizations should consider Dell Cloud Workshop or Cloud Road Map Accelerator engagements to jump-start their cloud journey. From data center building blocks to infrastructure management software, from SaaS to PaaS, Dell can provide the technology and the expertise to envision and deliver custom cloud solutions that help meet business needs.

Beyond the status quo

The Virtual Era represents a significant change in the way people, processes, and technology evolve inside a business. At this inflection point, it is incumbent on CIOs to drive efficiencies that go well beyond the status quo. Across industries and continents, implementing the Efficient Enterprise strategy has already led to impressive results:

- **Accelerated design with Lotus Racing:** Lotus Racing needed to hire staff, quickly create an IT infrastructure capable of running core business applications, and deploy scalable, mobile solutions with high uptime. Lotus partnered with Dell Services, and through a series of workshops over five days, designed a solution that would meet their needs—enabling the company to build a Formula One car 60 percent faster than it could before. Five weeks later, Dell and Lotus were trackside, up and running an Efficient Enterprise to support Formula One racing.
- **Innovation at MGM Resorts International:** Dell worked with MGM Resorts International to perform a Virtualization Assessment of its

data centers, then helped the company to consolidate 55 percent of its physical servers into a virtual environment in six weeks, reduce floor space requirements by 88 percent—and enable IT staff to spend 75 percent of their time on innovation.

- **Dramatic savings at salesforce.com:** Migration to standards-based Dell platforms doubled salesforce.com's database performance, accelerating data access for customers. The company also saved 10 times the cost of its previous systems by moving from RISC to an x86-based server infrastructure.

As these stories demonstrate, Dell's open, capable, and affordable solutions can help unlock an organization's fair share of the US\$200 billion available through increased IT efficiency and improved business agility. As a first step, organizations can work with their Dell account representative to calculate their IT efficiency using the Dell IT Efficiency Model (ITEM), a vendor- and product-neutral assessment tool that helps measure IT efficiency in a comprehensive way.² By embracing the Virtual Era, aligning IT with the business, and redirecting resources toward innovation, organizations can take the first steps toward breakthrough competitive advantage—and begin their journey toward becoming an Efficient Enterprise. **PS**

Learn more



The Efficient Enterprise:
dell.com/efficiententerprise



The Efficient Data Center:
dell.com/efficientdatacenter



The Efficient Workforce:
dell.com/efficientworkforce



Dell cloud computing solutions:
dell.com/cloud



Invest in innovation, not the status quo

This short video explains how the Efficient Enterprise strategy helps break the status quo—enabling organizations to standardize, simplify, and automate to drive IT efficiency.

dell.to/ctstXB



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¹ For more information on this partnership, visit content.dell.com/us/en/corp/d/press-releases/2010-07-12-dell-microsoft-cloud-azure-appliance.aspx.

² For more information on using ITEM to calculate IT efficiency, see "How does your IT measure up?," in *Dell Power Solutions, Efficient Enterprise Special Edition 2011 Issue*, dell.com/downloads/global/power/ps3q10ee-20110115-calculator.pdf.



Executive Q&A

Common ground

With more than half of its IT budget now focused on innovation, Dell is using technology to fuel global growth. Dell CIO Robin Johnson and CFO Brian Gladden talk about how the rapport between IT and Finance helped turn Dell into an Efficient Enterprise.

After cutting hundreds of millions in spending and eliminating a planned data center in 2009, Dell CIO Robin Johnson and Dell CFO Brian Gladden freed up half a billion dollars to reinvest in strategic infrastructure and business process innovations. Johnson and Gladden recently shared some of their experiences along the way toward transforming Dell into an Efficient Enterprise, along with insights into how the evolving relationship between IT and Finance organizations can really pay off.

How have IT and Finance interacted historically at Dell? What works? What doesn't?

Robin Johnson: Historically, the role of Finance was to set budgets and make sure IT hit

the numbers. IT and Finance have interacted much more closely in the last two years. In addition to managing budget performance, Finance has taken a keen interest in understanding and enabling the strategy we've created with Dell IT and our application architecture.

Most companies spend about 80 percent of their IT budgets just to run the infrastructures they have in place today. For the first year ever, we've been able to spend more than 50 percent of our budget on new development. Moving forward, we'll be working with the Finance organization to help improve the way we measure return on this development. The cost reductions weren't really the end goal, though. They were a nice benefit, but our key objective was to enable the next wave of Dell's growth.



"Our job in IT is to determine where technology can help enable the overall business strategy, convert that into a project road map that our business leaders buy into, and then drive the execution of that program."

—Robin Johnson
Dell CIO
September 2010

Brian Gladden: Dell IT has always been primarily focused on creating the infrastructure that allowed the company to dramatically increase revenue over very short periods of time. But in the past, we were maybe a little too responsive to the needs of every little project or initiative in the company.

We recognized that it was time to take a step back and think about how to facilitate the next wave of growth. We chose to do that by focusing on enterprise efficiency. We made significant, disciplined investments in standardizing our infrastructure and our application set, and we created consistent processes across the company. Finance and IT worked very closely together to identify the key investments that would help us create a core set of applications.

From a Finance perspective, how do you measure IT success?

Gladden: Instinct would suggest that cost reductions are the first measurement. And that's a big one. But success is really much more about IT efficiency. As business leaders, we have to think about the stability of the infrastructure and how effective it is, how innovative we are, and whether the projects we're funding will facilitate

our ability to grow. Our ability to move toward a standard set of applications is a critical measure of success in this environment. The speed at which we can integrate acquisitions is also an important capability.

Johnson: My perspective is slightly different. Stability and compliance are the two nonnegotiable tickets to entry. Being able to run what you've got today—reliably, every day—is the foundation. On the second level, the challenge is to drive efficiency into that.

Then there's the development side of the house. The key questions are whether we delivered new value, whether it was innovative, and whether it aligned with our overall business strategy. And wrapped around all of that is the question of whether we did those things in a fiscally responsible way.

What key elements does Finance look for during the budget conversation with IT?

Gladden: Acquisitions, strategic changes in direction, and shifting market conditions mean that we constantly have to make adjustments within IT—and consequently, how Finance supports IT. It's critical that we have the ability to flex our budgets so that IT can

“We were fairly deliberate in continuing to invest in standardization and centralization of our business processes. Rather than making dramatic cuts to save funds in the short term, we zeroed in on driving infrastructure costs out and making sure we funded strategic opportunities as well.”

—Brian Gladden
Dell CFO
September 2010





CIO perspective

The Dell CIO Resource Center for Enterprise Efficiency offers articles, interviews, videos, and events to help IT leaders turn their own organization into an Efficient Enterprise.

dell.com/cio

absorb work as it comes in, without having to go back to the well and ask for more money for every project.

The Finance organization has become more inquisitive during the process of developing IT budgets. Our conversations now are about how we can create that flex in a way that allows us to be responsive and deal with short-term opportunities, but also handle nonnegotiable aspects, like post-acquisition integrations.

Johnson: As I see it, Dell has always been incredibly focused on benchmarking and competitiveness. We spend approximately 1.74 percent of revenue on IT right now—much lower than most of the industry. And we'll continue to improve on that number.

The other key number is how much we're spending on development. Currently, almost 54 percent of our total IT budget is spent on creating new value. I would say that's a world-class number. The problem, though, is that the more development you do, the more fixed cost you incur as those new applications become a running cost. So there's always a little tension between what's running today versus what we're creating for tomorrow. We're always keeping an eye on that balance.

How has the economic downturn affected Dell's IT budget cycles? Has your strategy shifted in response?

Gladden: We've remained disciplined and steadfast in our commitment to executing key programs. We definitely found opportunities to cut discretionary spending and, in some cases, slow programs down in response to the challenges we saw. But we were also fairly deliberate in continuing to invest in standardization and centralization of our business processes. Rather than making dramatic cuts to save funds in the short term, we zeroed in on driving infrastructure costs out and making sure we funded strategic opportunities as well.

Johnson: It was by coincidence that we started shifting our focus from maintenance to innovation around the same time that the economic downturn began. But I think we would have done the same things in the best of times, because our goal was not just about money. It was about formalizing and supporting the strategies we use to address change and fuel future growth.

We were using around 8,000 applications in our worldwide infrastructure when we started this process—so consolidating and standardizing both the application base and our processes had to happen, regardless of the economy. Throughout the process we've had great support from Finance in remaining consistent and true to our mission: enabling growth through globalized solutions.

How do you see IT driving competitive advantage for the business going forward?

Johnson: There are fundamentally two ways you can build an advantage: reduce fixed costs and invest in innovation. Dell operates in 181 countries, so when we cut our fixed costs incrementally and make our systems faster and more stable, we see savings through economies of scale.

The key is to reinvest those savings in new development and growth strategies. Our job in IT is to determine where technology can help enable the overall business strategy, convert that into a project road map that our business leaders buy into, and then drive the execution of that program. The ratio of fixed costs versus development spending is a good indicator of whether we're investing appropriately in growth.

Has Dell's acquisition strategy affected the relationship between IT and Finance?

Johnson: I would say that now, it's more critical than ever for IT and Finance to be tightly partnered. Technology enablement is a critical component of achieving synergy after any acquisition. We've also gotten better at estimating



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integration costs. Our goal is to bake those into the acquisition plan from the beginning, rather than hit IT with unanticipated costs in mid-cycle.

Gladden: Our ability to be nimble has also been key. We try to complete integrations as quickly as possible. Scale matters—that's how we determine how to integrate systems. No matter what systems platform the acquired company is running, we must leverage the best available technology. That's the only way to drive continued value creation for our customers.

What role does IT play in the integration process following an acquisition? What do your repeatable processes look like?

Johnson: We treat acquisitions the same way we treated simplifying our regional applications. The acquired company has all the same things we would find when getting our regions onto single global platforms—they have a finance system, an HR system, an ERP system, and so forth. So we use the same methodology we would use to rationalize our regional applications. We look at the application set and determine how we will migrate those users to the standard global applications, and then develop the timeline to decommission the legacy applications when appropriate.

It's an interesting challenge because as you are working to simplify the existing Dell infrastructure on the one hand, you are acquiring new assets on the other. So you are always running the process to drive standardization and consolidation.

Gladden: I agree that the process is no different from what we did for our regional applications. Our IT organization is the brain trust in this process. Their goal is to establish a single code base for all our various application sets. As much as organizations may want the latest and greatest of a particular application set, IT must lead us toward global instances within functional organizational systems that maximize the acquisition synergies and minimize annual maintenance and support costs.

Has the way Dell manages its IT portfolio evolved over time? Have auditing and benefits validation processes changed?

Gladden: We invested in creating a consistent business analytics framework across the company for cost/benefit analysis, so now it's much easier for us to determine whether we achieved the benefits we expected in a given project. Where did it break down? What do we need to do differently? How can our teams learn from their mistakes and implement best practices? Those are questions we can answer today.

Johnson: This post-implementation analysis is really the critical step. The important question isn't whether the benefits case is good to begin with. It's whether we obtained those benefits, and why. The IT organization isn't equipped to do all of that analysis alone. We need Finance expertise to help answer those questions.

How has reinvestment in innovation enabled Dell to drive top-line growth?

Johnson: In the consumer space, we developed a tool for our Web site called Design Studio that allows customers to design the exterior lid of their own laptops. It's very graphical and very intuitive. It's a great example of how IT can help our customers grow and thrive.

Our value-added reseller program was also enabled online through a program called PartnerDirect. In the commercial space, DellStar is a great tool that our sales teams use worldwide for building complex configurations for our customers. For example, you could use it to design a SAN connected to a set of servers.

When I started in IT 20-plus years ago, IT was essentially in charge of automating the backroom functions of the office. Today it's come out of that support role to become the key enabler for virtually every business activity. You don't send a sales rep into the field without a whole load of IT—from the phone and the laptop to the ability to look up customer information in real time and provide customer support. **PS**



How does your IT measure up?

Efficiency is a key differentiator in well-managed organizations. But traditional metrics often fail to look beyond cost savings. The Dell™ IT Efficiency Model (ITEM) offers a highly sophisticated approach to help assess IT efficiency and effectiveness.

Driving efficiency gains throughout an organization has become a top priority in the executive suite. In challenging economic times, many enterprises succeed in cutting costs at the expense of business agility—with quite a bit of that cost cutting happening within the IT department.

Simple cost-avoidance measures ignore the fact that IT can be a strategic tool not only to reduce costs, but also to drive substantial top-line growth and competitive advantage. Business leaders must balance the pressure to reduce capital outlays with the urgency to also make strategic investments that increase global process efficiencies and accelerate the delivery of strategic IT services.

To accomplish that objective, CIOs need a new framework for showcasing IT efficiency in a business context. Although there are many

return-on-investment (ROI) tools and various benchmarks to measure IT, traditional tools do not necessarily enable CIOs to provide senior leaders—or even the board of directors—an accurate view into the efficacy of their investments and long-term IT strategy. Without establishing the appropriate measurements to assess progress, executives can be drawn into focusing on IT costs without understanding the value those technology investments can provide to the business.

A comprehensive set of organization-specific metrics including benchmarks, processes, tools, and best practices can be the cornerstone of an Efficient Enterprise. By evaluating IT efficiency in an operational context, executives can clearly relate spending to value—and make informed decisions based on the true return on a given IT investment, taking estimated top-line and bottom-line contributions into account (see the “Analyzing IT spending: The Gartner view” sidebar in this article).

Modeling IT efficiency potential



Knowing there was a gap in ROI tools that can quantify the business value of IT, Dell developed the online ITEM calculator to provide a vendor- and product-neutral way for organizations to evaluate the possibilities of their own environment. Test the waters with scenarios that model how changing the infrastructure or adopting new technologies can impact overall IT efficiency.

talktodell.com/go/ee-calculator

Analyzing IT spending: The Gartner view

How organizations manage their IT budgets as part of overall spending and as a percentage of revenue is one important metric for IT efficiency. This measure is the focus of a Gartner report that explores strategic spending categories reflecting how organizations are running,

growing, and transforming their business.* According to the report, “Gaps in business alignment can be found by examining IT spending as it relates to the day-to-day operations of a business (run), the organic growth of the business (grow), and its support of major

business transformation, new products, services or business models (transform).”

Examining IT spending as it relates to running, growing, and transforming business can help identify disparities in planning and positioning—and is a key step toward becoming an Efficient Enterprise. By

standardizing, simplifying, and automating IT, organizations can reduce the amount they spend just “keeping the lights on” and use the savings to drive innovation and transform their business.

For more information, download the full report at marketing.dell.com/it-metrics.

* “IT metrics: IT spending and staffing report, 2010,” by Kurt Potter, Michael Smith, Jamie K. Guevara, Linda Hall, and Eric Stegman, Gartner, Inc., January 22, 2010.



Digging deeper into efficiency

Dell engaged with independent research firm MGI Research to develop a vendor- and product-neutral assessment tool that measures IT efficiency in a comprehensive, highly sophisticated way. Over the course of a year, the IT Efficiency Model (ITEM) was developed to provide an interactive assessment tool that uses an objective, quantifiable set of metrics to benchmark IT operations and explain—in business terms—the contribution IT is making to the organization.

ITEM is designed to go beyond simplistic measures of efficiency, such as percentage of revenue spent on IT. It allows decision makers to estimate the impact that changes in IT infrastructure and practices like virtualization can have on efficiency, as well as the potential savings they can generate.

By taking into account inputs such as the organization's financial data, IT infrastructure, workload, best practices, and resource consumption, the model calculates the impact or effectiveness of IT on the business. ITEM can show, for example, how IT contributes to common corporate goals of growth and profitability, or how each incremental dollar spent on IT impacts business goals such as revenue growth and earnings before interest, taxes, depreciation, and amortization (EBITDA).

ITEM provides organizations a way to measure the contributions of their IT today, and then do "what if" analyses to see how potential changes to their IT infrastructure and operations may help improve overall efficiency and effectiveness. It is designed to take into account the workload and the characteristics of a cloud-based infrastructure, as well as modern industry best practices such as virtualization.

Understanding how ITEM works

When thinking about this tool, it's important to remember the definitions of *efficiency* and *impact*. Efficiency is the art of doing things correctly, and impact (or

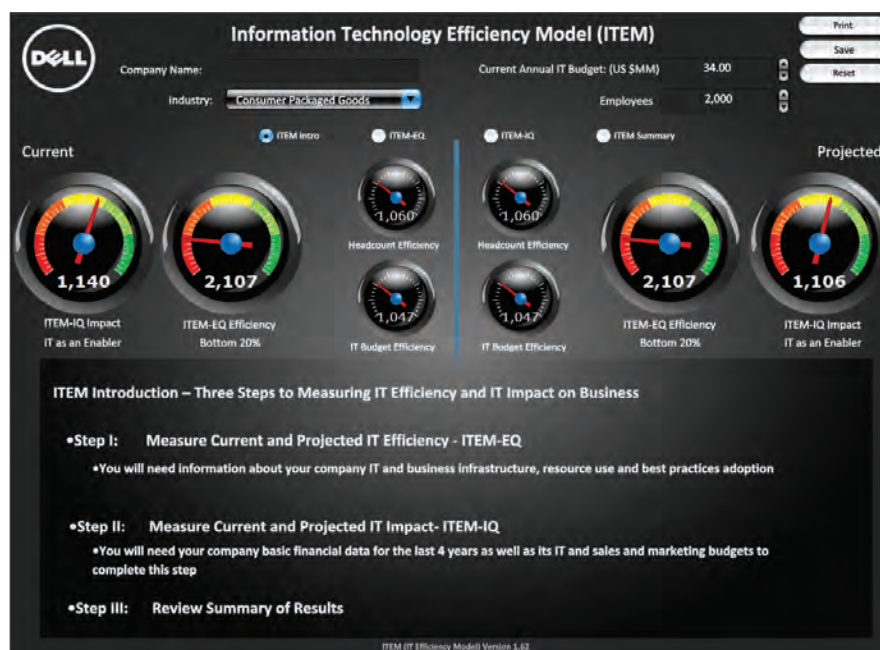


Figure 1. Measuring IT efficiency based on a comprehensive range of industry, network, and business factors

effectiveness) is the art of doing the correct thing. ITEM measures both approaches using newly developed metrics called ITEM Efficiency Quotient (ITEM-EQ) and ITEM Impact Quotient (ITEM-IQ).

These metrics are analogous to the latitude and longitude of the Efficient Enterprise world, helping organizations navigate toward higher IT efficiency and impact (see Figure 1). ITEM-EQ measures IT efficiency in a comprehensive manner, taking into account IT complexity and workload as well as metrics such as floor space, power usage, and attainment of best practices. ITEM-IQ measures how each incremental dollar invested in IT contributes to the attainment of corporate goals.

Enterprises can use ITEM to measure current values of IT efficiency and IT impact, and then model future scenarios based on adoption of new technology and best practices. ITEM aims to translate these gains into IT savings and financial impact on business.

Enterprise IT departments can access ITEM by working with their Dell account

representative. After the required inputs are gathered and entered into the calculator, the account representative interprets the results with the customer. Organizations can model the impact of changing individual variables, such as adoption of best practices and industry standards, and see how the results fluctuate over time. In the future, the tool can help analyze the efficiency of an organization as it compares to its peers.

Quantifying IT contributions to business growth

Building and evaluating IT efficiency depends heavily on developing a set of metrics, benchmarks, processes, tools, and best practices that are specific to an individual organization. The Dell ITEM tool provides a vendor- and product-neutral way to gauge IT efficiency using a highly sophisticated assessment model. By using an objective, quantifiable set of metrics, the model can help CIOs benchmark IT operations and measure the contribution IT is making to the organization in business terms. **PS**



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Intel's vision for the ongoing shift to cloud computing

Cloud computing promises large gains in efficiency and flexibility at a time when demands on data centers are growing exponentially. Intel's vision for the future of this technology focuses on key principles to make the vision a reality.

Rather than a *revolution*, cloud computing is an important transition, a *paradigm shift* in IT delivery. Cloud computing has the potential to transform the design, development, and deployment of next-generation technologies—enabling flexible, pay-as-you-go business models that reach from mobile platforms to the data center.

The cloud computing model is a step beyond virtualization, one driven by the ever-increasing demands placed on data centers. Initially, virtualization allowed organizations to consolidate server infrastructure to help reduce costs. Next, resource management technologies enabled dynamic resource allocation to help further reduce costs while increasing flexibility and performance. Now, cloud computing offers automation and scalability to help organizations rapidly deploy and optimize use of resources, increase operational efficiency, and reduce costs. In Intel's vision of cloud computing, a fully realized cloud infrastructure can provide competitively significant IT agility, flexibility, and adaptability through systems that are efficient, simplified, secure, and based on open standards.

Key elements of cloud computing

Intel's vision for cloud computing over the next five years centers on three key characteristics (see Figure 1):

- **Federated:** Data and services should move easily within and across cloud computing infrastructures. Today, the industry is just reaching the point where enterprises can move workloads within and between their own data centers. Intel's cloud computing vision calls for a level of federation that enables data and workload migration between service providers, burst implementations between internal private cloud and public cloud providers, and secure and reliable data flow across vendors, partners, and clients.
- **Automated:** Cloud computing services and resources should be specified, located, and securely provisioned with little or no human interaction. Today, the industry faces many gaps in automation. Intel's cloud computing vision calls for automation that dynamically allocates resources to agreed-upon service levels and optimizes the data center for maximum resource utilization and power efficiency.
- **Client aware:** Cloud computing solutions should adapt seamlessly to end-user devices and usage

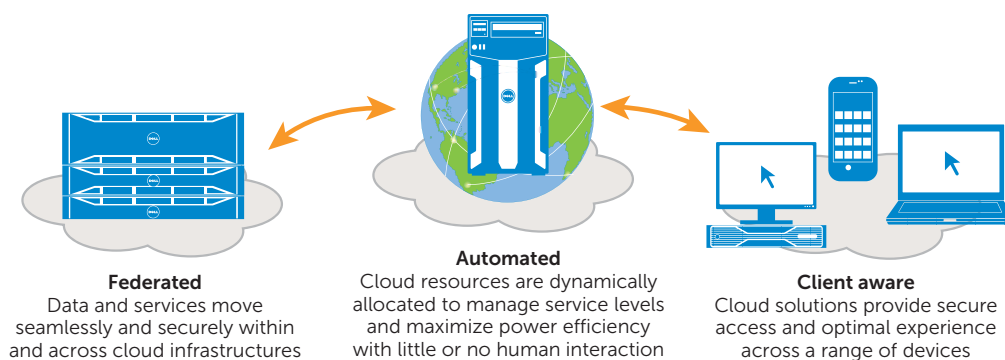


Figure 1. Intel's cloud computing vision

models. Today, some frameworks exist that allow a certain level of this intelligence, but they are neither consistently applied nor ubiquitous. Intel's cloud computing vision calls for data centers and service providers to enable secure access and optimal experience across a range of devices by making the cloud knowledgeable about attributes such as device capabilities, location, policies, and connectivity.

Principles for evolving infrastructure

Intel believes that, to realize the full potential of cloud computing, individual organizations and the IT industry as a whole must focus on four principles:

- **Efficiency:** While the need for computing throughput increases exponentially, resources such as space, power, cooling capacity, qualified IT professionals, and funding for infrastructure and operations are limited. Doing more with existing resources requires increased infrastructure and process efficiency.
- **Simplification:** Multiple architectures complicate management, increased server utilization raises network bandwidth requirements, and systems from different vendors often present integration complications. To deliver on their promise, cloud architectures and practices must simplify IT.
- **Security:** In an environment with abundant traditional security issues, cloud computing creates new challenges by moving data in new ways, often outside traditional physical boundaries. Successful cloud computing requires new security models to meet these challenges.

- **Open standards:** When multiple providers act independently, poor interoperability and lack of flexibility are the natural results—directly contradicting the main promises of cloud computing. The evolution of cloud computing requires carefully constructed open standards that support increased interoperability.

Intel's role in achieving the cloud computing vision

To help meet the challenges that IT architects and managers face, Intel is providing leadership and advancing efforts based on each of these four principles. A prime example is the Intel® Cloud Builder program. Created by Intel in conjunction with key independent cloud software vendors—including Canonical, Citrix, Enomaly, Microsoft, Parallels, Red Hat, Univa, VMware, and others—this program delivers cloud reference architectures that combine Intel Xeon® processor-based servers with leading software to help simplify cloud infrastructure deployment.

Intel's efforts extend across the cloud computing ecosystem, from silicon to platforms to software architecture to data center design. And by bringing engineering resources, a large network of global relationships, significant market development investments, and industry-specific expertise, Intel also acts as a major catalyst working with the industry to develop effective, open standards. This combination of vision and know-how can be immediately useful to IT professionals as they consider and implement their own cloud computing infrastructures. **PS**

Learn more

-  **Intel in cloud computing:**
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-  **Intel Cloud Builder:**
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MGM Resorts International

Betting on innovation


MGM Resorts International consolidates on virtualized Dell™ PowerEdge™ blade servers to automate its infrastructure, streamline deployment and management, and enable IT personnel to focus on strategic innovation.

Following several acquisitions during the past decade, MGM Resorts International now owns 15 resort casinos in Las Vegas—including the world-famous Bellagio, The Mirage, and Luxor—and is the half owner of CityCenter, an urban metropolis on 76 acres of the Las Vegas Strip. Just a few years ago, the company was wrapping up two large-scale mergers and had eight data centers, creating an IT jigsaw puzzle that was costly, complex, and difficult to manage.

Following a Virtualization Assessment from Dell Services with help from partners Intel and VMware, MGM Resorts was able to consolidate to a single co-location facility, reducing

6,000 square feet to approximately 720—an 88 percent reduction. Its standardized infrastructure—most recently based on Dell PowerEdge M610 blade servers with the Intel® Xeon® processor 5500 series and VMware® vSphere™ virtualization—has brought a variety of benefits, including automated workload shifting to help meet peak demands in different business segments, accelerated service delivery, and streamlined remote management. Using virtual machines in place of physical servers has reduced initial deployment costs by 68 percent, power costs by 81 percent, and CO₂ emissions by 82 percent.

To continue to compete successfully, MGM Resorts must keep its focus on giving guests more of what they want—which means investing time in innovation. “We’re now able to spend three-quarters of our day on innovation,” says Chris Gebelin, executive director of enterprise management at MGM Resorts. “That’s because of the overall efficiency of the way our data center is running.”

Gebelin attributes the successes of the past three years to the road map that Dell provided and the standardization, simplification, and automation that have helped make MGM Resorts an Efficient Enterprise. “The implementation plan that Dell put together for us three years ago has kept us in the sweet spot for technology agility and functionality,” Gebelin concludes. “We have the capabilities to dial up, dial down, predict performance, contain costs, and reduce power consumption.” 



Competitive efficiencies

By moving to a virtualized environment, MGM Resorts was able to significantly reduce IT cost and complexity.

8:1

Virtualized Dell blade servers enabled the company to consolidate from eight data centers to a single co-location facility.

75%

IT personnel now spend three-quarters of their time on innovation, helping the company continue to compete successfully.

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Salesforce.com

Building a scalable cloud

By migrating its databases to standards-based Dell™ PowerEdge™ servers, cloud computing leader salesforce.com achieves cost-effective scalability and doubles performance while dramatically reducing costs.

What began as a small San Francisco startup during the dot-com boom is today a thriving global enterprise that is transforming how software is delivered and used by a wide range of businesses. Salesforce.com is the leader in enterprise cloud computing services—sometimes known as software as a service (SaaS) and platform as a service (PaaS).

The company's impressive growth has been great for business, but has also presented challenges. Scaling the database infrastructure on the Sun SPARC-based servers has been particularly difficult. To move forward, the company needed hardware that could scale

cost-effectively as well as a global vendor that understood cloud computing.

Dell offered both—and after a Dell team provided a set of compelling recommendations, salesforce.com followed up immediately with a proof of concept. "Through our previous relationship with Dell and this proof of concept, we've seen that the Dell team can provide deep engineering assistance, reliable hardware, and extensive support," says Claus Moldt, senior vice president of technical operations. "In addition, it's clear that the Dell team understands that cloud computing is the future—Dell is even adopting the cloud approach in-house."

By moving from proprietary systems to standards-based Dell PowerEdge R905 servers with AMD Opteron™ processors, the company has cut server deployment time by 50 percent and the database infrastructure footprint by 30 percent while significantly reducing costs. "The Dell PowerEdge R905 server enables us to double performance while saving 10 times the cost of our previous systems," says Moldt.

Salesforce.com now has the cost-effective, scalable infrastructure it needs. "The new Dell hardware infrastructure will enable us to build larger database clusters, introduce new cloud computing services, and add more customers all while controlling our costs," says David Fearnley, senior director of technical operations. "With help from Dell, we can remain a leader in this burgeoning field." 



Rapid growth

Standardization has helped salesforce.com create an efficient, scalable infrastructure to maintain its competitive edge.

50%

Streamlined provisioning has helped cut server deployment time by 50 percent.

10x

Dell servers save 10 times the cost of the previous systems, enabling the IT group to increase redundancy and availability.

Broadcom® iSCSI HBA

on Dell™ PowerEdge™ Servers
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Broadcom best-in-class 10 GbE and
1 GbE iSCSI HBA and boot solutions
provided "inbox" in VMware vSphere 4.1
for Dell PowerEdge servers

Contact your Dell sales representative
for more information





Carnival Cruise Lines

Serious fun

Deploying virtualized Dell™ PowerEdge™ servers and EqualLogic™ storage helps Carnival Cruise Lines make the most of a small shipboard footprint, maximize reliability, and reclaim 7,000 hours per year for its information systems managers.

Customers of Carnival Cruise Lines want to get away from it all. Whether they choose to dance into the wee hours, play miniature golf with the kids, or just read a great book by the pool, most are looking for a vacation from the complexities of everyday life.

These fun and carefree cruises rely on a cutting-edge IT infrastructure—one that poses unique challenges. Because each ship is its own floating island, efficiency and reliability are crucial. Looking to get the most out of the available footprint, Carnival engaged Dell to determine how it could use virtualization to consolidate its servers.

Carnival began implementing VMware® vSphere™ virtualization on Dell PowerEdge servers and EqualLogic storage, and quickly saw the results. "Now that we've gone virtual, we're saving floor space, saving power, and getting better airflow, which keeps the servers cooler," says John Staker, senior information systems manager on the new ship Carnival Dream.

The standardized infrastructure has simplified management and increased reliability, including saving Carnival's information systems managers up to 7,000 hours a year. "The storage arrays have been rock-solid," Staker says. "At Carnival Cruise Lines, we do everything possible to ensure that our guests enjoy their vacation. By providing a highly reliable server environment, our virtual machines on Dell servers and EqualLogic



storage support that mission." Carnival is now planning to move its shoreside data warehouse onto a similar platform that uses hybrid EqualLogic arrays with both solid-state drives and spinning disks.

"We have a true partnership with Dell," says Doug Eney, vice president of information systems engineering at Carnival. "Many vendors have walked in here and said they're our partner, but then we've had a problem when the presales period was over and the partnership went out the window. Dell delivers cost-effective and reliable solutions, and whenever we've brought up issues with the Dell team, they've determined the root cause and worked with us on the solution. They always show a commitment to actually being our partner." 



Cruising to efficiency

In this video, learn more about how the efficient Dell platform is helping Carnival deliver an unforgettable vacation experience to 3 million guests every year.

[youtube.com/watch?v=is8_AlcYdQA](https://www.youtube.com/watch?v=is8_AlcYdQA)

As an Efficient Enterprise, Lotus Racing
can now build an F1™ car 60% faster.



Efficient Enterprises can accelerate products
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The power to do more



Efficient Enterprises
can accelerate
Microsoft® Windows® 7
deployment by 76%
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The power to do more

*Healey, Matt. IDC White paper commissioned by Dell, "Dell PC Optimized Deployment Model." May, 2010.