In Cloud Computing, Simpler Is Smarter

Cloud computing has now moved beyond – way, way beyond – the "next new thing" to widespread acceptance by more and more organizations. But as the market becomes increasingly sophisticated in terms of thinking about and planning for cloud, it also confronts a new reality: confusion over everything from nomenclature and strategic goals to selecting the right partner. This document will help you sort through the maze and build your own road map to success.
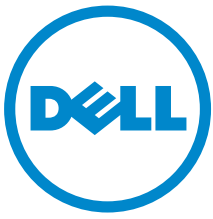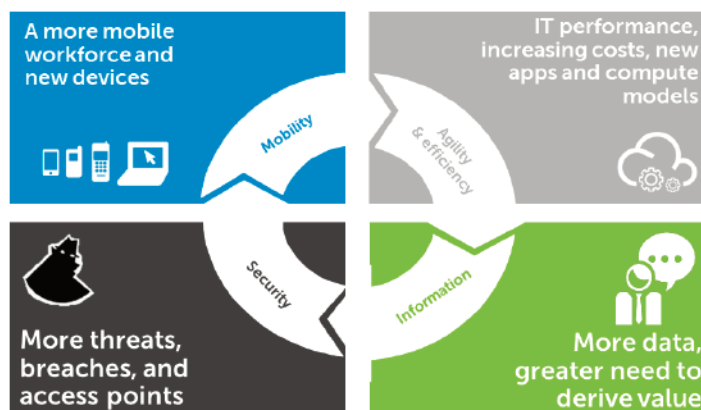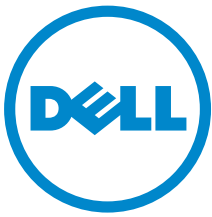
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By now, there's little doubt about the importance and benefits of cloud computing. Research firm Gartner Inc. predicts that cloud computing expenditures will top $150 billion by 2014, noting that two-thirds of large enterprises plan to pursue a private cloud strategy by that time. Another analysis notes that global cloud traffic will account for nearly two-thirds of total data center traffic by 2016. Whatever the motivation – lowering infrastructure costs, increasing IT's responsiveness to changing business demands or making IT workloads easier to scale and manage — there's hardly an executive on the planet who isn't considering how to take advantage of cloud computing for organizational benefit.

But while convincing stakeholders to embrace cloud computing to at least some degree is hardly an issue, there are still plenty of challenges to confront and obstacles to overcome. Getting in front of those issues is becoming more difficult and more important, because the increasing noise level around cloud computing is breeding confusion and uncertainty among decision-makers. That confusion may not be centered on the fundamental question of whether to adopt cloud in the first place, but it is a big concern when organizations try to sort out the key elements of how, when and even why to deploy cloud architecture and move key applications, services

Welcome to the next era of IT

A more mobile workforce and new devices

Mobility

IT performance, increasing costs, new apps and compute models

Agility & efficiency

More threats, breaches, and access points

Security

Information

More data, greater need to derive value

Today, new and complex challenges face IT organizations: supporting an increasingly mobile workforce, overcoming a growing array of security threats, turning Big Data from a hurdle into an asset, and improving overall IT performance in the face of budget and staff cutbacks. More and more often, cloud computing is seen as a potential solution to these and other problems. But actually making cloud computing a strategic asset requires cutting through massive confusion, contradictions and hype in order to make smarter decisions.

Addressing and Overcoming Confusion

Unlike other fast-moving technology trends, sorting through the confusion over cloud has very little to do with the technology itself, for the most part. Instead, gaining clarity for organizational adoption of cloud strategies and tactics centers on resolving several misconceptions or points of confusion about cloud:

- Cloud is not a rip-and-replace strategy for most companies. Cloud can, and typically should, be deployed in well-planned, manageable stages, based upon a variety of factors.

- Cloud security, while still a key issue for many organizations, isn't really the problem: The challenge is actually just knowing what level of security is needed, and ensuring that it is provided as efficiently as possible

- While having a strong technology foundation is essential for successful cloud deployments and operations, cloud isn't about technical prowess as much as it is about organizational strategy and business process.

- Cloud doesn't make life easier; it makes IT organizations more innovative and better contributors to overall results — and makes them a competitive differentiator.

- Cloud architectural nomenclature currently in use – public, private, hybrid – may not be the clearest way to communicate different approaches to putting cloud to work for the organization.
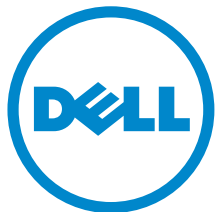
- Not all cloud solutions are created equal; in fact, some supposed cloud services really aren't cloud solutions at all. A Forrester Research study points out that 83 percent of executives surveyed expressed frustration with cutting through promotional claims in order to determine which providers really were offering cloud services, rather than just "cloud-washing" traditional hosting services.

A Vision for Cloud Computing: The Dell Point of View

The hype-meter for cloud computing has been running overtime of late, with the term being used at every conference, on every blog and even in television commercials. In fact, so many companies are claiming their place at the table for cloud computing leadership that this, too, has added to market confusion.

Few companies can claim as much commitment to cloud computing as a way to help organizations achieve demonstrable goals – and can claim as many success stories – as Dell. That's because Dell brings a unique perspective on how to use the essential building blocks – hardware infrastructure, security, applications, middleware, process innovation, consulting, outsourcing, services-oriented architecture and customer service – to suitably plan, architect, deploy and manage cloud computing to meet each organization's unique needs.

For instance, Dell's history in working with companies to plan and implement their cloud architecture helps the company understand a key tenet of cloud strategy: Cloud is a process that is best deployed in manageable pieces over time, not a widespread hardware rip-and-replace that disrupts organization processes and causes widespread confusion and even service interruption. As company founder and chairman Michael Dell famously stated several years ago, "Cloud is not a destination or singular path, but a transformation that places IT squarely at the center of the enterprise as both a leader and enabler of value creation."
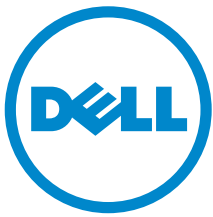
At the heart of Dell's point of view on cloud computing is a trio of key principles that not only defines how Dell interacts with its customers, but also acts as a road map to help companies define their own strategies: flexible, integrated and secure. Individually, each of these is an essential piece in the cloud puzzle for enterprise-class and small organizations alike, across all geographies and all vertical markets. Together, they represent a synergistic approach for enabling operating improvements and value creation.

By flexible, we mean cloud should be implemented in the most appropriate way for a customer's unique requirements, taking into account everything from its current infrastructure and IT governance policies to its financial model, processes and corporate culture. Dell doesn't promote a single approach to cloud because every customer is different and needs different skills, services and building blocks from its cloud partners. Some companies have found they need to start with a small number of tactical applications to serve as a proving ground for cloud, while others have a higher comfort level, adopting cloud for more strategic initiatives and broader geographic coverage.

One of the most important elements of ensuring flexibility is a commitment to open architecture. For instance, the OpenStack cloud initiative is a widely adopted industry movement for infrastructure as a service (IaaS) based upon open-source software; it addresses compute, object storage and image service functions. Dell embraced OpenStack from its inception because of its commitment to key "open" concepts such as avoiding vendor lock-in, reducing risk of technology shifts, lowering total cost of ownership and leveraging a wide base of industry expertise in hardware, software and services.
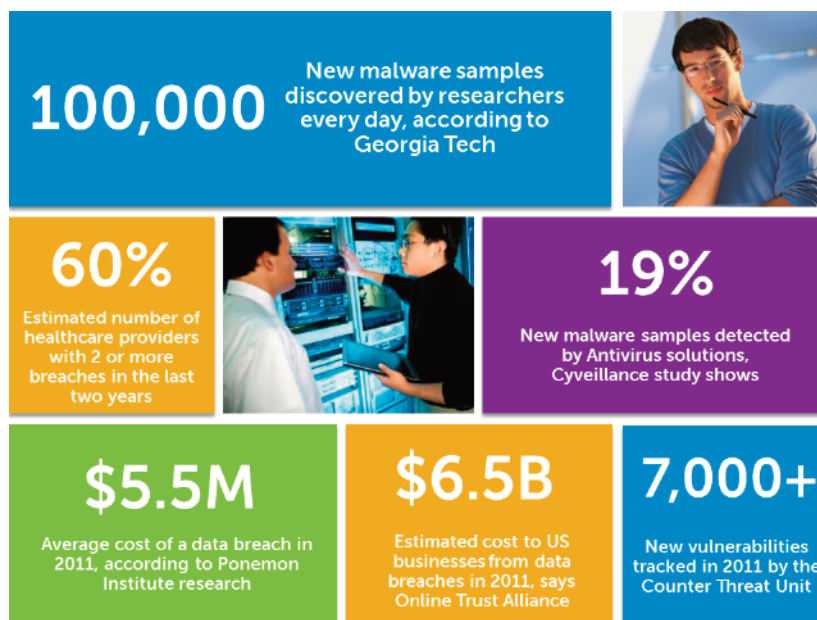
A flexible approach to cloud computing planning and implementation helps address the market's lingering confusion of "the single best way" to approach cloud. Flexibility means that clients don't have to meet a specific blueprint, and that their blueprint can change over time as business conditions dictate.

An integrated approach to cloud allows companies to transcend boundaries of all sorts – physical, process, application, geography, infrastructure and internal resources. By stripping away those boundaries through integration, organizations can use cloud as a glue or fabric, linking private cloud applications with legacy software, public cloud services with private cloud infrastructure – or any combination necessary.

An integrated approach to cloud planning, deployment and operation means companies can leverage their existing and future investments, regardless of where the information asset resides, while reducing complexity utilizing tools that don't require custom coding, pricy software licenses or hardware appliances.

In the cloud world, secure has to be defined from the inside out, rather than simply putting digital locks on network endpoints to keep out intruders. Whether it's deployed on-premises or off-premises as a private cloud or off-premises as a shared, public architecture, customers need absolute confidence that security practices protect infrastructure, applications and data.

100,000 New malware samples discovered by researchers every day, according to Georgia Tech

60% Estimated number of healthcare providers with 2 or more breaches in the last two years

19% New malware samples detected by Antivirus solutions, Cyveillance study shows

$5.5M Average cost of a data breach in 2011, according to Ponemon Institute research

$6.5B Estimated cost to US businesses from data breaches in 2011, says Online Trust Alliance

**7,000+** New vulnerabilities tracked in 2011 by the Counter Threat Unit

Whatever the motivation – compliance, IT governance, business continuity – cloud-based security needs to be meticulously planned and fanatically executed both at the outer edge of the cloud and at the cloud's core, as well as on-premises within the data center. With the average cost of a data breach estimated at $5.5 million, security is necessarily at or near the very top of IT leaders' concerns when it comes to cloud. But cloud security can't be a total lockdown of the system; it must be planned and executed as part of an overall strategy, with appropriate layers of protection for storage, backup, networks, servers and mobile devices. Experienced cloud service providers, in fact, often can rightfully claim to have more robust security for their cloud architecture than many private data centers.

To help clear up mounting confusion that could get in the way of companies getting the most from their cloud investments now and in the future, the most successful organizations are adhering to a coherent, consistent philosophy espoused by Dell. Customers can best implement cloud when the approach is pragmatic part of a business strategy rather than a technology play, and when it allows for innovation without disruption.

Taking a pragmatic approach is all about simplification, making it easier to plan, implement and manage cloud-based services. Here's where the "small bites" mentality makes a lot of sense for most companies. Not only does it ease deployment, but it also allows organizations to evaluate their progress and measure benefits at reasonable intervals and make necessary adjustments.

It's also important to remember that cloud, while rooted in important technology underpinnings such as infrastructure and security, isn't primarily about the technology itself. Instead, adopting cloud – and leveraging its full potential – depends upon the organization's willingness and ability to embrace it as part of its business strategy. Important issues such as
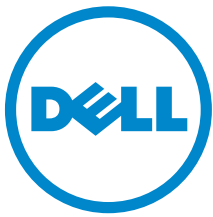
self-service, costs, employees' roles and the company's appetite for change and risk must be taken into account when planning for cloud architecture. If the cloud strategy doesn't align with the key goals, it won't achieve its full potential to improve results.

Finally, remember that the goal isn't simply to be innovative in the acceptance and usage of cloud computing. That innovation can't disrupt key operations, either by forcing employees to set aside well-functioning business practices or relearning the most fundamental elements of their jobs. That innovation also can't put the organization's core infrastructure at risk for unexpected downtime or costly recovery steps. If your cloud strategy feels like it's getting in the way of progress instead of facilitating it, stop and rethink what you're doing. Organizations – in concert with their cloud partners – should design cloud architectures that adapt to their business processes, not the other way around. Remember, it's all about optimizing performance of both your technology assets and your people.

Evaluating and Selecting a Cloud Services Partner

With IT staff resources and access to specialized expertise under pressure due to budget necessities at many companies, picking the right external partner is essential. That's true whether you need a partner to help you build, deploy and/or operate a private, on-premises cloud, host cloud services for you on a public, off-premises architecture, or take a hybrid approach combining consultation, architecture design, technology build-out, applications migration, hosted services and legacy systems integration. In fact, more and more organizations are evaluating and selecting cloud partners based on their ability to bring multiple cloud-centric skills and experiences to the table, because they understand that their needs are likely to evolve over time.
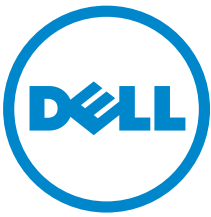
As a result, IT decision-makers charged with finding the best cloud partner are creating their own checklists of capabilities and expertise as they search for a service provider with the best mix of technical, process and management skills. These include:

- **A proven track record** – demonstrated by reference accounts in a variety of industries – for cloud services ranging from building out private, on-premises clouds to hosting robust, scalable public clouds in an off-premises environment.

- **Deep technical skills** in infrastructure (storage, servers, networking, endpoint devices), software (applications, middleware, security, virtualization hypervisors) and legacy systems integration.

- Reference architectures for cloud computing, which simplify the development and deployment of the most appropriate cloud design for each organization.

- • Hands-on experience in a wide range of regulatory and compliance issues, in an array of geographies.

- Process knowledge, such as outsourcing, deployment methodologies and business process management.

- Service and support capabilities, including reporting, remote monitoring, variable pricing structures and disaster recovery/business continuity.

- A strong commitment to understanding and working with each organization's unique needs, including risk mitigation, corporate culture and political savvy.
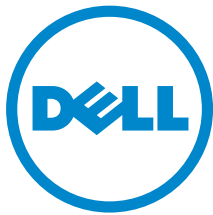
Of course, organizations also are looking to work with cloud partners with substantial financial resources, to ensure continued support as their needs evolve and scalability requirements increase over time.

Dell Solutions for Cloud Tasks and Functions

Dell brings a combination of proven experience, a corporate commitment to cloud computing and decades-long technology expertise in the cloud services market. Dell has built its cloud solutions on a foundation of capabilities that can be deployed in whatever combination the customer needs.
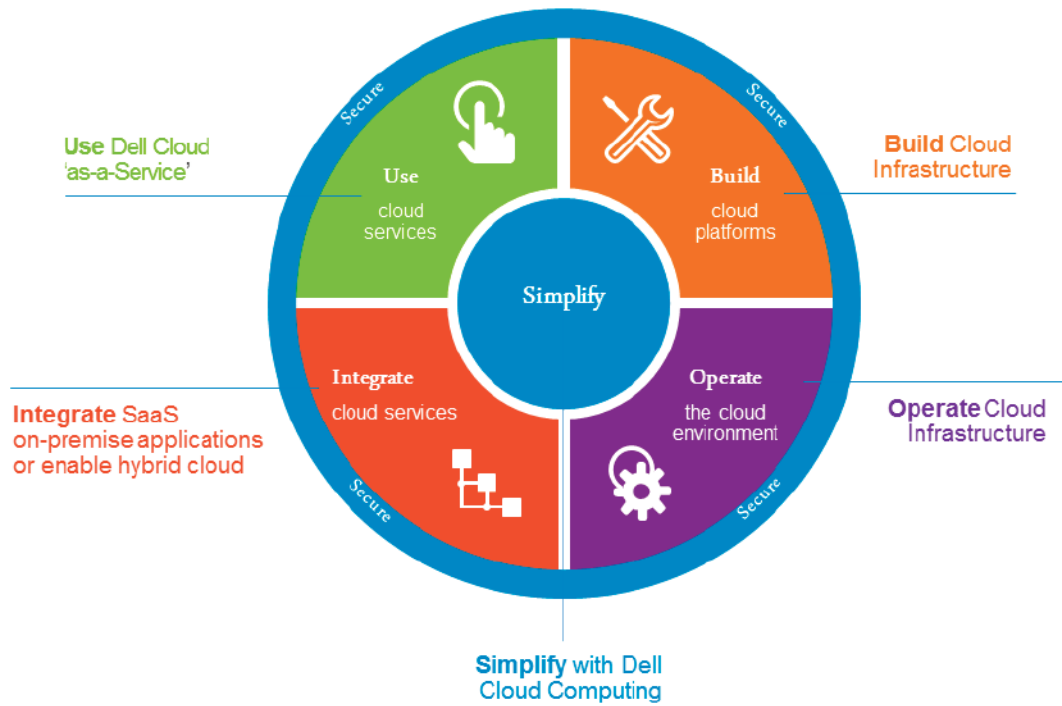
Dell offers an expansive mix of cloud services for organizations ranging from very small companies with limited IT resources to the largest and most complex multinational corporations. These services include:
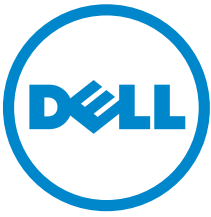
- Hosted services for applications access (SaaS), data center infrastructure and systems management.

- Virtualized storage, servers, desktops and networking.

- Building and operating on-premises cloud architecture.

- Secure, scalable off-premises public cloud capabilities.

- Integrating on-premises and off-premises architecture into a hybrid solution that provides seamless operation, regardless of where system assets are located.

- Security as a service (backup, archive, restore; notebook data encryption; email security; device management; system tracking).

- Application integration.

- Enterprise notification.

- Software asset management.

Dell delivers the full breadth of cloud solutions

Use Dell Cloud 'as-a-Service'

Use cloud services

Build cloud platforms

Build Cloud Infrastructure

Simplify

Integrate cloud services

Integrate SaaS on-premise applications or enable hybrid cloud

Operate the cloud environment

Operate Cloud Infrastructure

Secure

Simplify with Dell Cloud Computing

Integration, in particular, is an invaluable capability for customers looking to embrace cloud as the essential fabric of their computing architecture. Whether it's building a hybrid cloud or integrating Dell's public cloud services with an organization's legacy applications and data, Dell offers a number of tools to make that happen.

One of the key solutions is Dell Boomi, a cloud-based integration tool that links cloud, SaaS and on-premises applications. This is a critical capability for r equirements such as metered usage or self-service applications. Another important approach comes from integrating and extending workloads in the Dell vCloud offering, powered by VMware's vCloud Datacenter Service. This hybrid-cloud architecture helps enterprise-class organizations deploy IaaS hosted in hardened Dell data centers around the globe.

Dell's cloud solutions are designed to help organizations access a variety of services and applications either in their own private cloud or a hyper-secure public cloud; build dedicated cloud solutions for clients on their premises; operate those private solutions or deliver those cloud-based services from Dell's own public, off-premises cloud; integrate on-premises and off-premises applications and services into a single, cohesive architecture; simplify the planning, development, deployment and delivery of cloud services; and offer the most secure environment for critical data, essential services and rock-solid compliance practices.

Proof Points for Dell's Cloud Capabilities

Through a combination of internal initiatives and key acquisitions of IT services and cloud technology providers such as Perot Systems, SecureWorks, SonicWALL and Boomi, Dell has helped numerous enterprise-class and small/midsize companies take advantage of cloud computing. This is further augmented by Dell's strong
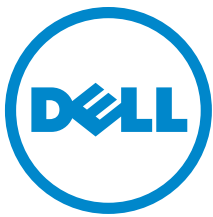
relationships with technology providers such as Intel, VMware, Microsoft, Citrix, Trend Micro and many others. The benefits to these organizations are numerous, demonstrable and tangible. For instance:

- More than 20 billion security events are processed daily by Dell SecureWorks, a core competency of Dell Cloud Services.

- Over 5 billion diagnostic image objects are managed by Dell in the cloud for its customers, providing critical support to more than 40,000 physicians and over 500 individual medical practices.

- Dell was the first supplier of hybrid clouds to support VMware, the leading virtualization hypervisor. This lets customers use a "single pane of glass" to manage workloads from a secure, high-performance public cloud architecture.

- More than 1 million integration processes are handled daily by Dell Boomi.

- A leading payment processing services company saved more than $430,000 in the first month alone, and more than $5 million in the first year, after deploying a Dell cloud solution for process integration.

- An IT solutions provider used Dell cloud services to seamlessly integrate three critical business functions, reducing order entry time by 85 percent and saving $1 million in custom development costs for SAP integration.

Finally, independent research by Bloor Research International confirmed that Dell Boomi delivered far lower total cost of ownership and achieved the fastest time to value of any major competitor studied. The white paper, based on real-world data at major enterprises that have adopted cloud integration solutions, validated Dell Boomi's edge when measured against such competitors as IBM, Pervasive, Oracle, Microsoft and Informatica.

Summary

Dell's goal is to make cloud computing simpler to plan, execute and manage by providing organizations with the right combination of services and technologies to meet their current needs while still offering a lengthy runway for simplified expansion in the future. Whether it's building a private cloud, extending Dell's public cloud services to integrate with on-premises assets, hosting mission-critical applications or data on an outsourced basis or just providing trusted advice on different options, organizations of all sizes and across all industries have worked successfully with Dell to deploy the right cloud computing strategy for their organization.

Cloud computing is more than an opportunity to make IT more efficient and less expensive; cloud is an essential part of organizational strategy. Dell's commitment to cloud computing is manifested in its ability to provide a rich palette of solutions that can be easily adapted to individual companies' needs – today and in the future.