

Fly High

Cloud Computing: Moving from 'Next Big Thing' to Practical Reality

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Cloud computing gets a lot of attention these days as one of our industry's "Next Big Things." And like most "Next Big Things," discussions about cloud computing often include an unfortunate tendency to overuse terms like "game changer" and "paradigm shift" and a strong temptation to apply an unnecessarily thick layer of hype.

Of course, some "Next Big Things" do end up meeting their lofty expectations, and cloud computing certainly appears to be one of them. But as with any significant technology shift, making that all-important transition from "Next Big Thing" to practical, business-ready solutions require patience, a willingness to look honestly at both the possibilities and the potential pitfalls, and the ability to develop a smart strategy for staying ahead of the curve while avoiding costly missteps.

> The Hype

The sales pitch for enterprise cloud computing goes something like this: Imagine a world where you could take out your Blackberry, instantly spin up a 150-node Linux cluster to take care of some intensive data analysis project and then just as quickly get rid of all that extra computing power when the project is completed. The whole process is remarkably quick and painless, because you don't actually have to deploy those extra servers in your own data center. Instead, you simply tap into a vast "cloud" of enterprise computing resources, pay only for what you use and then release those resources back into the cloud when you're done.

In addition to basics such as raw processing power and storage capacity, this same model can extend to enterprise applications, business processes, even whole development platforms, all hosted inside a vast enterprise cloud of computing resources. In this scenario, cloud computing serves as a robust infrastructure foundation for software-as-a-service (SaaS), platform-as-a-service (PaaS), infrastructure-as-a-service (IaaS) and other stuff-as-a-service we haven't even thought of yet. In this perfect cloud-computing world, anything that goes on inside a computer, or even a full corporate data center, could be ported to the cloud, which has obvious potential to save IT organizations impressive amounts of money.

That's the hype and it's not completely unjustified. Competent cloud offerings are already available from Amazon, Google, IBM, Microsoft and others. Many other industry newcomers and heavyweights—including Novell—are making serious investments in cloud computing. As a result, thousands of smaller organizations are already embracing cloud computing as a way to lower IT costs and take advantage of services and capabilities they could not otherwise afford.

What's Inside the Cloud?

• **Software as a Service (SaaS):** Applications delivered over the Internet—usually through a Web browser.

• **Infrastructure as a Service (IaaS):** The delivery of computer architecture over the Internet, including operating systems, databases, middleware, applications and storage.

• **Platform as a Service (PaaS):** A model that makes application middleware and development tools available through a remote service provider.

• **Private Clouds:** In-house environments that use cloud methods to manage workloads.

> The Reality

On the other hand, this rosy cloud computing scenario inevitably raises serious questions in the minds of savvy IT professionals:

- How do I secure and protect critical corporate data that lives in the cloud?
- How do I enforce compliance when critical data no longer resides in my own data centers?
- Who is responsible for guaranteeing the reliability and availability of data and applications hosted in the cloud?
- How will cloud computing affect IT administration and management?
- How can my organization avoid getting locked into a single cloud computing platform or vendor—especially if that vendor goes out of business?

Most of these issues are linked directly to very valid concerns about control. For these reasons and many others, many enterprises simply aren't willing to trust existing cloud computing infrastructures and platforms to run their businesses.

> Putting Cloud Computing to Work

Based on its obvious potential, reinforced by recent investments by industry heavyweights, it's safe to say that enterprise cloud computing is here to stay. Now, it's a matter of working through the challenges, deciding how cloud computing can play a positive role in your enterprise and carefully determining the best approach for getting the maximum value from this new computing

model.

The Top Five Novell Contributions to the Cloud

- **Security** with the *Novell Cloud Security Service*
- **Deployment** with *software appliances*
- **Management** with *PlateSpin Workload Management*
- **Collaboration** with a new Novell product providing *integrated workspaces*
- **Connecting to the Cloud** with the *Moblin* operating system

Also recognize that embracing cloud computing does not mean shutting down your data centers and moving your whole IT operation into some undefined public infrastructure. Many organizations are creating highly distributed computing environments that are essentially private clouds built for mission-critical operations and then tapping into public cloud computing resources for less sensitive, more routine computing tasks such as analyzing research data. This hybrid model addresses many of the control issues enterprises are most concerned about, while still delivering the promising economic benefits and agility of cloud computing.

> **Novell in the Cloud**

Many of the potential challenges surrounding enterprise cloud computing will need to be addressed by vendors willing to make the investment to develop and adapt their technology for a cloud computing paradigm. Novell certainly has a vested interest in doing this. Linux is by far the most prevalent underlying platform for delivering cloud computing services, so it makes good business sense for Novell to continue to focus on Linux solutions that work well in highly-distributed and virtualized cloud computing environments. Novell is working to make other contributions in the cloud computing space as well. These include new products and initiatives in the following areas:

Security

For many enterprises, security is the biggest inhibitor to serious cloud computing. Until you can monitor and control exactly who is accessing information in the cloud, and know precisely from where they're accessing that information, cloud computing can never be a viable option for large enterprises. Novell is tackling this difficult issue head-on with a new Cloud Security Service that makes sure the enterprise cloud services you use can adopt and enforce your toughest enterprise security policies. Basically, the Novell Cloud Security Service "annexes" a segment of a public cloud, retrieves and applies the appropriate security policies from your enterprise authentication system, and then releases those

resources back to the cloud when you're finished. As you evaluate SaaS or PaaS offerings, making sure they're part of the Novell "Trusted-Cloud" program will go a long way toward keeping your employees' credentials safe and making sure you can easily perform audits and de-provision people from cloud-based applications.

Deployment

Many cloud computing service providers and organizations are looking for faster, more efficient ways to deploy complex enterprise applications in a cloud environment. To address this issue, Novell has developed an innovative software appliance solution that eliminates the overhead, inefficiencies and security problems that often accompany conventional application deployment. Rather than installing and testing all the complex elements of an enterprise application on a traditional monolithic operating system, Novell SUSE Studio makes it easy to simply package and deploy them on a self-contained appliance.

These appliances consist of a customized Linux operating system, commonly referred to as a "just-enough operating system" (JeoS), along with the appropriate middleware and application software. These optimized, fully supported "plug-and-play" software appliances are ideal for private and public cloud environments. SUSE Studio makes the process of creating and deploying Linux-based software appliances easy and convenient.

Management

You can't take advantage of an environment that includes public clouds, private clouds and traditional data centers unless you also have the ability to seamlessly move workloads among these different pools of capacity. Novell PlateSpin provides this flexibility with sophisticated workload management solutions that make it easy to seamlessly shift workloads among heterogeneous virtual environments and dynamically run them where it makes the most sense.

Collaboration

Cloud computing has serious implications for collaboration. It accelerates communication to real-time chat speed. It blurs the lines between personal and professional collaboration. And it makes the process of creating and working as teams as easy as sending an e-mail. Novell is working to create a new collaboration tool that makes the most of these new possibilities. This new product will provide a single secure integrated workspace for sharing tasks and information that's designed specifically for cloud computing environments.

Connecting to the Cloud

Cloud computing also has the potential to fundamentally

change desktop computing by shifting computing power and storage from heavy, full-featured and energy-hungry PCs to the cloud. This makes it possible to do more with smaller, lighter weight and more energy-efficient devices like netbooks. To accelerate this shift, Novell is working with Intel to create the Moblin framework—an easy-to-use, efficient and lightweight operating system designed specifically for cloud computing. The SUSE edition of Moblin will be shipping soon on a wide variety of netbooks.

> Plot Your Own Cloud Computing Course

These types of efforts from Novell and other vendors and service providers are the key to solving today's cloud computing challenges and making this promising new computing model a safe, practical reality for your enterprise. As these efforts intensify and mature, cloud computing should continue to earn its "Next Big Thing" label and bring important benefits and savings to larger—and even smaller—enterprises. To learn more about Novell and cloud computing, visit novell.com/cloud. **N**