

Connection

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ARTICLES

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Novell.

Why Virtualize

Cutting through the hype to understand how virtualization can truly transform your data center

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At Novell, we depend on virtualization every day to make our own data centers run more effectively and return more value to our business. That's why we're running a four-part series in *Novell Connection* describing some of the virtualization techniques we use for data center automation—techniques you can use to achieve the same benefits we've enjoyed.

This first article in the series discusses some of the decisions you need to make and the processes you need to implement to build an effective virtualized environment. We also give you an overview of the solutions Novell uses to implement those decisions and processes. Then, in each of the next three issues of *Novell Connection*, we'll take a deep dive into those solutions, showing you how to put them to work to address specific needs.

> Virtualization and the “Fluid” Data Center

Why virtualize? You've probably heard all the standard reasons: maximizing your server investment; lowering server refresh costs; and reducing the cooling, electricity and floor space required by the data center.

With a typical enterprise server running at perhaps 15 percent resource utilization, virtualizing and consolidating multiple services on one physical server can yield up to a seven-fold increase in efficiency in all these areas.

At Novell, our virtualization initiatives support these straightforward goals. But we also use virtualization to achieve a more fundamental benefit: a “fluid” data center that automates our ability to devote computing resources and network bandwidth precisely to the tasks where they are needed at any given time.

For example, here are a few of the ways we use virtualization to keep data flowing as business and technical conditions change from day to day:

- **Hardware upgrades.** When we need to upgrade the hardware on a given server, our virtualized “fluid” data center allows us to move services over to a virtual machine, do the upgrade, and move the services back—all in a matter of minutes and with no disruption to the users who depend on availability of the services.
- **Capacity optimization.** When a service is maxing out CPU, memory or storage capacity on one physical server, we can move the workload to a more capable server on the fly—without worrying about compatibility issues. Conversely, if a service is using only a fraction of physical capacity, we can place additional services on that box.
- **Image deployment.** Once we've built a virtual machine to run a configured and tuned operating system and application, we can save it as an image and then deploy it to other boxes without redoing the

configuration work for each different system.

- **Protection of legacy investments.** There might be times when software or hardware on which we rely is no longer supported or available. We can preserve the value of legacy systems indefinitely by creating an image of the complete legacy environment and running it as a virtual machine on a current platform.
- **Business process management.** We use virtualization to help manage cyclical business processes—moving processes on the fly, for example, to accommodate the strain on financial applications at the end of each fiscal quarter. We can even do this automatically by policy.

These are just a few virtualization scenarios that work for us; and they're tactics you can apply in your own data center automation projects. But there's nothing generic about these virtualization tactics. It's not just a matter of throwing more processes onto a server until it has reached nearly full capacity.

Instead, you need to base tactics on a three-pronged strategy. First, you need the ability to discover your technical assets and provide visibility into their operating behavior. Second, you need an efficient way to create virtual machines that work on your choice of physical systems. And third, you need a way to manage and orchestrate physical resources and virtual machines in continuous adaptation to your changing business and technical requirements. Here's a high-level overview of the solutions we use at Novell to realize this strategy.

“Virtualization in and of itself is interesting, and it gives you server efficiency, but without some of the automated tools, it may actually increase your management burden.”

**—John Enck
Gartner**

> Discover

Before you can virtualize effectively, you need to know what you have. That includes both the operating systems, applications and services that may be candidates for virtualization as well as the hardware that might be best

suited for hosting virtualized environments. But just knowing what you have isn't enough. You also need to know how everything *behaves*—including resource utilization and trends over time, both within each system and in comparison with other systems.

At Novell, we use PlateSpin PowerRecon to provide complete and precise details on our available assets and how they are being utilized—and to graph utilization across processes and machines for intelligent analysis. In the December issue of *Novell Connection*, we'll take a closer look at the discovery process and how PowerRecon can help you plan an optimum virtualization strategy.

> Create

Once you have created a virtualization strategy, the next step is to create virtual machines. This involves several issues, including whether any given service is fully virtualized or paravirtualized, the hypervisor that will be used, the method used to create the virtualized image, the optimum size of the image, how to connect to SAN storage, and how to move the service from its current home to the virtual world.

At Novell, we use the XEN hypervisor running on SUSE Linux Enterprise Server, providing a completely flexible, open-source platform that offers reliable performance no matter what OS, applications and drivers are included in the virtual machine. And we use Platespin PowerConvert to automatically create virtual machine images that will run on our choice of hardware, under our choice of OS.

We'll discuss PowerConvert and XEN in more detail in the December issue of *Novell Connection*, giving you insights into the virtualization decisions and creation process we use here at Novell.

> Manage/Orchestrate

With virtual machines in your environment, you need an effective way to orchestrate processes and manage resources. For example, you need solutions for tasks such as moving an OS and applications from an old server to a new server, moving from an over- or under-utilized server to a right-sized server, adding a server to a computing cluster to meet increasing demand, and so on—all without losing information or interrupting users.

At Novell, Platespin PowerConvert continues to play an important role in this phase, allowing us to create and move virtual machines as needed without affecting user productivity. In addition, ZENworks Orchestrator acts as the "brains" of our data center automation system. We use it to manage virtual machines, identities, physical servers and storage in a coordinated and intelligent way according to workload requirements, hardware health and business policies.

In the January issue of *Novell Connection*, we'll give you a more detailed look at the roles of Orchestrator and PowerConvert in automating day-to-day operations in the data center.

> Data Center Automation

Data center automation is a goal in which physical boundaries no longer apply: resources are automatically assigned to workloads according to dynamically changing needs; physical failures are unnoticeable to end users; and identity management, storage management, system management and virtual machine management are all tied together and automated across the IT environment.

We're well on the way toward achieving these goals in our own IT environment, and we hope you'll join us in the months ahead on this innovative and promising journey. **N**

Smart Start

[Start Planning for Novell BrainShare 2009](#)

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Believe it or not, BrainShare 2009 is less than four months away, which means it's already time to start planning your trip to one of the most popular and well-regarded technical conferences in the industry.

Novell BrainShare 2009 Basics

Conference Dates: March 8-13, 2009

Location: Salt Lake City Salt Palace Convention Center

Early-bird Registration (US\$1,695):

Nov. 1 – Feb. 13

Full-price Registration (US\$1,895):

Feb. 14 – Mar. 13

[>Register Now!](#)

If you're a BrainShare veteran, you'll recognize all the things you've come to love about BrainShare—informative technical breakout sessions, in-depth workshops and hands-on training opportunities, and plenty of close, personal interaction with Novell partners and the company's top technical talent. But you'll also notice some new and exciting changes to the conference that will enhance your BrainShare experience.

It's Your Conference. Vote Now!

For the 2009 conference, you get to determine which session proposals make the final cut. The process is easy:

- Read through a short abstract for each proposed session.
- Rate each proposed session topic based on your interest.
- The highest-rated proposals will be developed into actual breakout sessions at BrainShare.
- You can vote online any time between November 17 and December 5.

[>Start Now!](#)

For example, the BrainShare team has combined the Novell Technology Lab with the Exhibitor Showcase to create a comprehensive new "IT Central" area that will provide an even richer and more hands-on experience featuring solutions from Novell and its partners. And based on its overwhelming popularity last year, the Installation & Migration Depot will be expanded and open all week long in the South Lobby of the Salt Palace. They're also changing around the schedule just a bit, so make sure you visit the [Web site](#) to get up to speed.

What's New at Novell BrainShare 2009?

Every year, the BrainShare team works hard to preserve the things you love about BrainShare and add new elements that make the experience even better. Here are a few of the additions and improvements planned for 2009:

- **IT Central**—This new area combines and expands the Novell Technology Lab with the Exhibitor Showcase to provide you with a richer and more unified experience.
- **Expanded Installation & Migration Depot**—Due to popular demand, an enhanced version of the hands-on depot will be open all week long.

If you're thinking about attending BrainShare for the first time, you'll quickly learn what long-time attendees have known for years: BrainShare is one of the best technical conference values you'll find anywhere. For the early-bird registration price of US\$1,695, you get six full days packed with more than 500 hours of educational content and training—and there are plenty of other things to look forward to: great food, entertaining and enlightening evening parties and events, and much more.

Novell BrainShare Action Items for November and December

BrainShare is still a few months away, but here are a few things you can do now to improve your conference experience:

- **Register now** to reserve your spot and take advantage of the early-bird savings. [>Go](#)
- **Vote for the sessions** you'd like to see at BrainShare 2009. You can vote any time between November 17 and December 5. [>Go](#)
- Check out the **2009 week-at-a-glance schedule**. This will give you a good feel for the new changes and activities we have planned for 2009. [>Go](#)
- Look for more detailed information in upcoming editions of *Novell Connection*.

During the next few months, *Novell Connection* will feature a series of articles with more detailed information about the sessions and activities you can look forward to at BrainShare 2009—along with some suggestions for making 2009 your best BrainShare experience ever. In the meantime, make sure you check out the official BrainShare [Web site](#), [register quickly](#) to take advantage of the early-bird discount and [review and vote](#) on the session proposals for 2009. **N**

Best of the Best

This article first appeared in the November 2008 issue of *Novell Connection* magazine.

The results are in. After reviewing the stats, here are the most popular articles of 2008. If you missed them the first time around, be sure to check them out now.

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#1 *June 2008*
**Novell Calls It a Service Pack—
But It Feels More Like a Major Upgrade**
You'll be blown away when you strap on the new ZENworks Configuration Management Service Pack.

[Stream MP3](#)

#2 *January 2008*
Teams That Work
Novell Teaming creates an online environment that empowers individuals to work together more effectively and productively. It brings the right people together to handle business challenges.

#3 *September 2008*
Lucky No. 8
When it comes to manual approval processes, the bottom line is that they're simply inefficient, slow and wasteful. It's time to automate and make your money back.

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#4 *June 2008*
How Many Nines Do You Need?
The Site-to-Site High Availability of Novell Business Continuity Clustering

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#5 *September 2008*
Untapped Power
GroupWise 8 is on the horizon. Find out how it will make your life as an admin easier.

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#6 *July 2008*
Workflow in Teaming
When it comes to manual approval processes, the bottom line is that they're simply inefficient, slow and wasteful. It's time to automate and make your money back.

[Download PDF](#) [Stream MP3](#)

#7 *October 2008*
Seamless Simplicity
Domain Services for Windows is now supported in Novell Open Enterprise Server 2. See if now's the right time for you to take advantage of it.

[Download PDF](#) [Stream MP3](#)

#8 *September 2008*
**Optimize Your Network
Regardless of IT Budget Cuts**
Still stuck with lowering IT budgets and increasing costs? Hear Laura's six things you should still do on a vanishing IT budget.

#9 *March 2008*
A Better Base
For beginners, databases can be frightening. But with a little help in building effective forms, you'll be on your way to populating a database that can almost take care of itself. See how here in our OpenOffice.org series that covers the database application included in the free office suite.

[Download PDF](#)

#10 *July 2008*
Worth Your Weight in Gold
Too often, IT is regarded as a necessary evil needed to manage the company's technology. It's high time you took your rightful place as the golden goose in your organization!

[Download PDF](#) [Stream MP3](#)

Costs Down Profits Up

This article first appeared in the November 2008 issue of *Novell Connection* magazine.

A fast-growing retail organization eliminated downtime with SUSE Linux Enterprise Server and reduced administration time by 50 percent.

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La Curacao is a fast-growing retail organization that relies on the 24/7 availability of its systems. Downtime is not an option, particularly during the month of December when the store's business increases by 500 percent. Moving to SUSE Linux Enterprise Server has eliminated downtime and provided a scalable platform for increased growth.

> Overview

La Curacao is a growing chain of department stores in the U.S. With an Hispanic focus, La Curacao ranks among the top 100 electronics and appliance retailers in the U.S. The company has 2,500 employees and 10 stores in California and Arizona.

> Challenge

As a dynamic retail organization, La Curacao requires high availability from the mission-critical systems that support its stores. Any downtime has a huge impact on sales. Last year, the company experienced unplanned downtime several times, often lasting as long as four hours.

The company's existing database implementation did not have robust clustering support and suffered from performance bottlenecks. All store inventory and pricing is stored in a central database, so performance was critical to improve the responsiveness of its point-of-sales systems.

La Curacao also continues to expand its business, opening new stores and hiring new employees. Moving to a 64-bit operating system would provide the scalability and performance to support its fast-growing business.

“Linux became the obvious choice for us as it is more secure and could give us significant cost savings. A comparative UNIX platform would have cost us three times as much.”

Eryk Szachniewicz
Software Development Manager
La Curacao

> Solution

La Curacao evaluated several options, including Red Hat, UNIX and Microsoft Windows, before selecting SUSE Linux Enterprise Server with its High Availability Storage Infrastructure.

“Reliability was our highest priority and we needed something easy to manage,” said Eryk Szachniewicz, software development manager at La Curacao. “Linux became the obvious choice for us as it is more secure and could give us significant cost savings. A comparative UNIX platform would have cost us three times as much.”

La Curacao worked with Novacoast, a Novell Platinum partner, to implement SUSE Linux Enterprise Server in a clustered environment on HP ProLiant servers. The High Availability Storage Infrastructure included in SUSE Linux Enterprise Server provides clustered support for the company's mission-critical InterSystems Caché database.

“Our database is the core of all our systems and is the foundation for 95 percent of our business,” said Szachniewicz. “SUSE Linux Enterprise Server provides unparalleled support for our business with a clustered environment. We've had absolutely no failover in our production environment.”

The High Availability Storage Infrastructure in SUSE Linux Enterprise Server includes high availability service and application clustering by integrating open source components including Heartbeat, Oracle Cluster File System, Logical Volume Manager and Enterprise Volume Manager. The multi-node failover support in Heartbeat keeps La Curacao's stores running without interruption, particularly important in December when the company's business increases by 500 percent.

“La Curacao now has a pretty hands-off environment that is basically maintenance-free,” said Dan Elder, Linux services manager at Novacoast. “With SUSE Linux Enterprise Server, we've implemented a front-end cluster and some backup database servers for solid business continuity.”

Having a Linux platform makes it easy for La Curacao to scale its business with the ability to quickly add new servers. The company's database now runs on multiple servers which have eliminated the performance and memory problems of the past. With reliable systems, the IT staff spends significantly less time managing systems.

“Our systems don't ever go down,” said Szachniewicz. “We can now manage our systems from a central location using the remote management capabilities of SUSE Linux Enterprise Server. Gone are the days of having to do night maintenance.”

With a high availability Linux platform, La Curacao can now open new lines of business, including more e-business opportunities that require 24/7 availability.

“We have to be able to handle thousands of users at the same time who all demand high performance. SUSE Linux Enterprise Server allows us to handle peak times without any downtime.”

Eryk Szachniewicz
Software Development Manager
La Curacao

“We had an excellent experience working with Novacoast,” said Szachniewicz. “They are extremely professional and responsive and allowed us to complete a seamless implementation. Having a good partner is a huge part of our success and they certainly exceeded our expectations.”

Moving forward, La Curacao plans to upgrade many of its file and print servers to [Novell Open Enterprise Server](#) to further leverage its Linux environment.

> Results

By implementing SUSE Linux Enterprise Server, La Curacao created a high availability platform for its

mission-critical systems for a third of the cost of a comparative UNIX system. Its two-node cluster, based on the High Availability Storage Infrastructure, is easy to manage and has eliminated downtime. The company can easily add new servers to accommodate rapid growth, without having to hire more IT staff.

Moving to a Linux platform has reduced administration time by 50 percent, freeing up the IT staff to focus on other projects such as database optimization and user interface design.

“Without Novell, it would have been impossible to grow our business the way we have,” said Szachniewicz. “We have to be able to handle thousands of users at the same time who all demand high performance. SUSE Linux Enterprise Server allows us to handle peak times without any downtime.” **N**

Article Summary

Products and Services:

SUSE Linux Enterprise Server

Results:

- Implemented a high availability environment for one-third the cost of a comparative UNIX system
- Eliminated downtime of its mission-critical database
- Reduced administration by 50 percent
- Created a platform to support rapid growth