

DATA CENTER SOLUTIONS

Create an agile infrastructure



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Agility

Agility is at the core of every organization's IT infrastructure because only agility lets you embrace change and capitalize on it—not just deal with it. Increase interoperability, achieve simplicity and become more flexible so you can meet the business demands of data centers today and in the future. The possibilities are endless when IT is truly agile. **In short, it's making IT work as one.**



novell.com/datacenter

Step it up

We help you reach complete IT agility with our implementation model, which we call “Discover-Migrate-Manage.” This model helps maximize the agility in your data center at a price that fits your budget. **Our unique suite of tools enables you to discover server workloads that are ideal for virtualization, consolidation or migration. As we work with our ecosystem of partners, we help you seamlessly build your next-generation data center using existing investments. Finally, we help you manage your data center, so you can optimize physical or virtual workload performance.**

No matter which of these challenges you face, we have a solution to meet your needs. Our Data Center solutions can help you in the following areas:

Workload Management

1. Unified Physical and Virtual Management
2. Workload Portability and Migration

Virtualization and Consolidation

1. Server Consolidation
2. Business Continuity and Disaster Recovery
3. Green IT

Enterprise Linux Servers

1. UNIX to Linux Migration
2. Mission-Critical Linux
3. Linux for Mainframes
4. Real Time Linux
5. Virtual Machine Guest



WORKLOAD MANAGEMENT



Work smarter, not harder. The PlateSpin Workload Management solution from Novell is designed to optimize the data center by profiling, migrating and protecting server workloads across the enterprise between physical servers and virtual hosts.

This solution works with your existing physical and virtual infrastructures, including VMware, Citrix and Microsoft Hyper-V. With our solution, you can achieve new operational efficiencies and cost savings by effectively managing changing requirements as a workload progresses through its lifecycle from provisioning to retirement. Only Novell can simplify the management of all your servers across a mixed IT environment and allow you to maximize the value of your data center and meet business demands.

**Scenario 1:
Unified Physical and Virtual Management**

**Scenario 2:
Workload Portability and Migration**



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Scenario 1: Unified Physical and Virtual Management

To be truly agile, today's data center needs its physical and virtual resources to work together seamlessly in support of business goals. It needs real-time monitoring of utilization, and it needs to be able to quickly respond to changing demands by provisioning and deprovisioning machines quickly and intelligently. Unified Physical and Virtual Management delivers the insight and management required to achieve maximum return on your IT investments.

Customer Situation

A European energy company needed to reduce the carbon footprint and total cost of ownership for its data center operations. It wanted to achieve these goals by consolidating three data center sites into one central location. The company had found that the majority of its 700 servers were underutilized and knew that it would eventually have a power supply that could not accommodate its rapid infrastructure growth. The company faced the challenge of finding a solution that would enable it to quickly migrate server workloads to new hardware in the consolidated data center without time-consuming, manual system rebuilding. Because of the mission-critical nature of the workloads being migrated, the company needed a solution that could take the risk out of their data center consolidation. The company also wanted a flexible workload migration solution that would allow it to continuously optimize its data center by moving workloads to the physical or virtual hosts where they would run most efficiently.

The Solution

The company chose PlateSpin PowerRecon from Novell to remotely monitor the server environment and obtain an accurate and detailed view of the entire data center landscape—including server inventory and utilization metrics. Because of the mission-critical nature of the new PlateSpin solution, the company was reticent to implement it itself. So instead of having its own administrators migrate the servers, the company decided to work with its longstanding consulting integration firm. Fortunately, this firm also had a close, working relationship with Novell and our PlateSpin products. By working with one of our partners, the company had the expertise it needed from a company it trusted.

PowerRecon enabled IT administrators to quickly and easily identify which servers were the ideal candidates for virtualization. After this assessment phase, PlateSpin PowerConvert was used to execute the data center consolidation plan and perform all the physical-to-physical and physical-to-virtual workload migrations quickly and easily with minimal business disruption.

To date, the company has used PlateSpin PowerConvert from Novell to rapidly migrate more than 260 server workloads from HP hardware to IBM servers. In addition to these physical-to-physical migrations, administrators also used PowerConvert to migrate approximately 50 servers to VMware ESX Server 2.5, reducing the physical footprint in the consolidated data center by seven to eight percent. The use of virtualization and blade servers has helped the company address power and cooling issues in the consolidated data center—a major concern for the company because of its commitment to conservation and environmental responsibility.

It would have taken a team of 25 half a year to build all the applications in the consolidated data center at an estimated cost of more than three million. With Novell and PlateSpin, a team of fewer than eight trained and certified staff members migrated all of the company's servers in just one month.



"PlateSpin PowerConvert [from Novell] has enabled us to quickly migrate our physical servers to virtual servers, which is assisting us in the rapid consolidation of our data center. We have now converted over 20 physical servers. The technical support is what really makes PlateSpin stand out among its competitors. We have always received excellent and timely support from their dedicated staff."

Michael A. Lamia
Systems Administrator
Philips—Advance Transformer Corporation

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Scenario 2: Workload Portability and Migration

With Workload Portability and Migration, you can easily move entire server workloads back and forth between physical and virtual hosts in an automated fashion to ensure workloads are always located where they will run most efficiently. Workload optimization balances your physical and virtual infrastructures. It leverages ongoing workload monitoring and the automatic consolidation, deconsolidation, and free movement of server workloads throughout the network to ensure efficiency.

Customer Situation

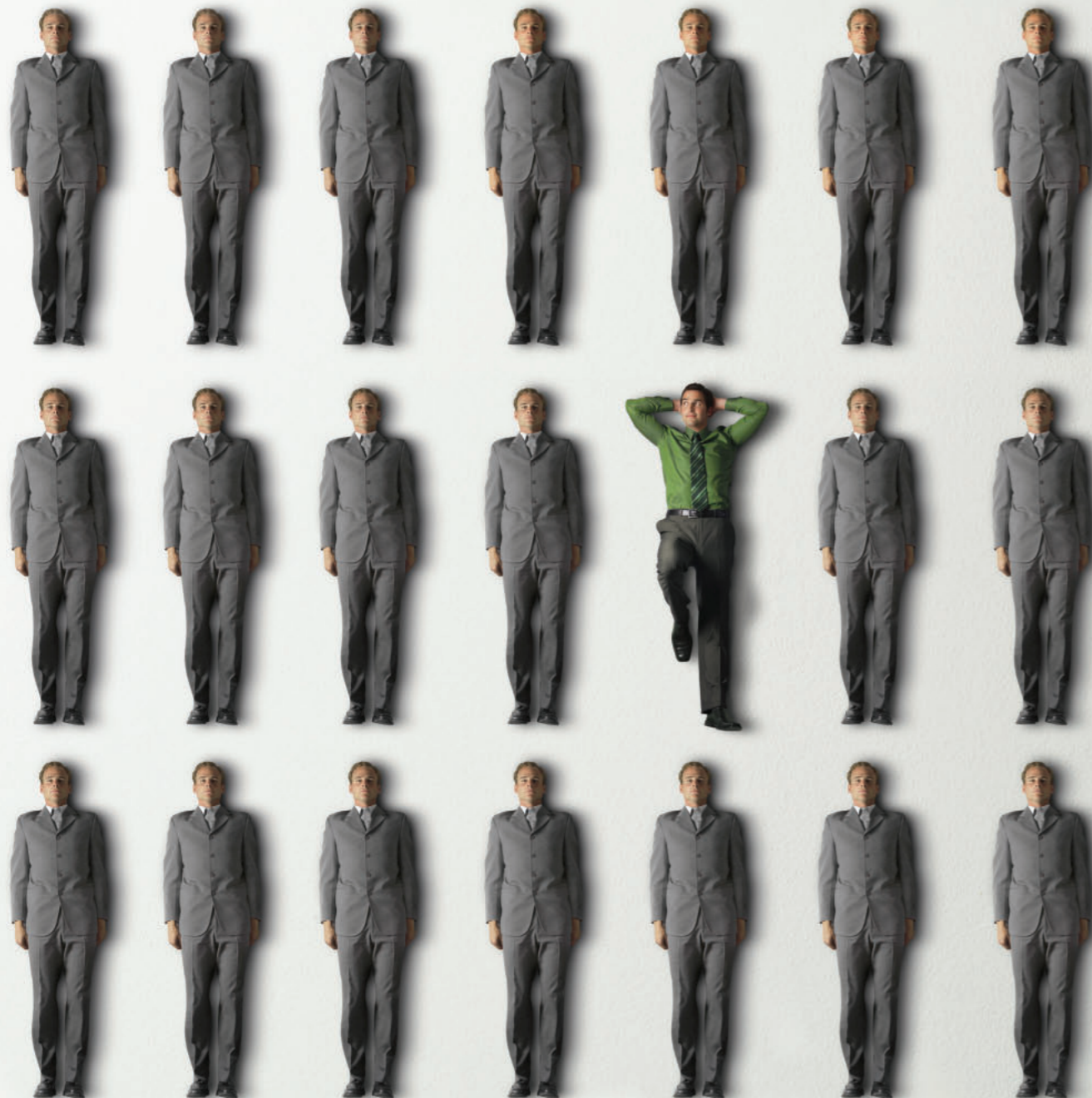
A government agency in Asia Pacific began a major overhaul of how it managed and applied IT. Facing budget reductions and a mandate to streamline costs without degrading services, the agency needed to optimize its data center. The agency was inefficiently using its servers, which was leading to system crashes, downtime and lost productivity. In fact, the agency's servers were so inefficient and underutilized, that it was getting less than five percent server utilization on average.

The Solution

With vast room for improvements in efficiency and server utilization, the agency worked with an outsourced consulting agency to implement a solution. The team first used PlateSpin PowerRecon from Novell to right-size servers based on utilization of disk, memory, network and processor. PowerRecon is agentless software that measures, analyzes and determines the optimal fit between server resource supply and workload demand. By remotely capturing server resource capacity and workload demand statistics, PowerRecon ensured that the right server infrastructure had been matched to the right application workload to maximize performance while minimizing hardware cost.

Once the client had discovered and analyzed its existing environment, it deployed PlateSpin PowerConvert to increase its data center flexibility. PowerConvert was then used to quickly and easily migrate the servers to the virtual environment. The agency is now able to configure and optimize its data center by streaming workloads over the network between physical servers, blade infrastructures, virtual hosts and image archives.

By removing the dependency between the agency's data center infrastructure layer and the business applications that run on it, PowerConvert allowed the agency to continually match service level requirements with available resources by rapidly reconfiguring, relocating and optimizing workloads. PowerConvert also simplified IT management: It provided all these features from a single point of control—without having to be in physical contact with source or target servers. Together, PlateSpin PowerConvert and PowerRecon from Novell were able to deliver a comprehensive workload lifecycle management solution.



VIRTUALIZATION AND CONSOLIDATION



Maximize your efforts. Virtualization enables multiple workloads, applications and operating systems to run on one piece of hardware, so that you can consolidate applications and servers to reduce your overall IT expense.

And Novell is the only virtualization vendor that delivers a complete infrastructure for virtualization, workload migration and workload lifecycle management from one source, for both Linux and Windows. In addition, Novell offers technologies for rapid server deployment and business continuity and disaster recovery.

With Virtualization and Consolidation from Novell, you can maximize the flexibility and efficiency that virtualization offers, and reduce the total cost of ownership by simplifying and automating the management of both physical and virtual servers.

Scenario 1:
Server Consolidation

Scenario 2:
Business Continuity and Disaster Recovery

Scenario 3:
Green IT

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Scenario 1: Server Consolidation

Regardless of the size of your enterprise, you want to get the most value from your IT investments and improve efficiency at a lower total cost of ownership. With Novell, you can virtualize Linux and Windows on one common Linux platform with complete support for both operating systems. That way, you have the flexibility to reconfigure your applications and systems to increase server utilization without impacting performance.

Customer Situation

A major IT services company in Europe wanted to consolidate and virtualize its servers. The company's overall goal was to improve productivity by standardizing communication tools across the group, to strengthen security and to promote better IT control and cost-efficiency. The company began looking at ways to consolidate its numerous branch systems into a smaller number of physical servers in a central location. It initially selected virtualization software from a major vendor, but the cost of the approach was threatening to outweigh the potential benefits, so the company decided to use an alternative virtualization software.

The Solution

To resolve its physical server challenge, the company chose to consolidate using Virtualization and Consolidation from Novell and replaced its existing Windows servers with Linux servers. These new physical servers can now run as many Linux virtual machines as required, which means the company uses much more of its available computing power, even as it cuts cooling and power costs.

The company can now create preconfigured virtual machines and bring them into service on existing hardware automatically, whenever the workload demands them. We also made it easy for the company to create virtual environments quickly and easily. IT administrators can build testing and development environments in minutes, rather than hours or days, without affecting the production environment.

These abilities were essential since one of the company's customers had a time-sensitive requirement for a Linux development environment. These virtualization and consolidation capabilities even benefit our customer's customer, who was able to build a virtual testing environment on the company's servers, completely circumventing the complex process of procurement and purchasing. This means the company spent its resources developing its offerings rather than chasing vendors.

Finding training on the Novell solution was easy. Company engineers attended Advanced Technical Training (ATT) classes on virtualization. Delivered at an engineer-to-engineer level, the company was able to ask about specific situations it had encountered in its environment and get specific answers it could put to immediate use.

Using our products, the company has cut its virtualization overhead from 40 percent to as low as five percent. Lower overhead keeps the company agile and gives it a distinct edge by allowing it to respond to its customers' requests and to business realities much faster than its competitors can. Virtualization allows the company to clone, migrate and restart environments quickly if the system crashes. The company has also reduced its power consumption, space requirements and cooling needs while using up to 95 percent of its available computing power, rather than the 60 percent it had been realizing with its previous virtualization solution.

Only Novell offers operating system-based virtualization with cross-platform systems management. It is the most robust and best-supported open source virtualization solution for Windows server consolidation, and it integrates seamlessly with your existing infrastructure. With our enterprise-grade open source solution, based on SUSE Linux Enterprise Server, the company was able to replace its existing server system, lower costs and increase performance throughout the enterprise.



“Based on our initial results, we estimate the software cost of Xen and SUSE Linux Enterprise for virtualizing Windows systems is just 10 percent of competitor solutions. The difference is even greater if you consider that other solutions require more expensive hardware.”

Norihito Kuniyoshi

Managing Director

Casio Information Service Co., Ltd.

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Scenario 2: Business Continuity and Disaster Recovery

In today's on-demand environment, downtime is costly. Your business suffers when workloads are not consistently available. And the damage due to downtime can also extend beyond financial issues—into key areas such as customer loyalty and market competitiveness. To avoid this, your data center must recover quickly from all downtime, whether planned or unplanned.

Customer Situation

Faced with increased regulatory compliance pressure, IT staffing constraints, and merger and acquisition activities that increased the strain on its IT systems, a global investment firm needed to provide disaster recovery capabilities across a range of server workloads in its data center. With offices in New York, London, Frankfurt, Toronto and Dallas, the firm needed to improve recovery time and point objectives (RTO and RPO) for the physical and virtual server workloads running within its main data center site in New York. Specifically, the company needed to extend disaster recovery capabilities to server workloads such as Exchange, SharePoint, file and print servers, financial applications and custom applications—all in a simple, easy-to-manage and cost-effective manner.

The Solution

The company selected PlateSpin Forge from Novell to provide the complete out-of-the-box protection it was looking for. And to ensure that the solution was implemented correctly, the company brought in a small, regionally based systems integrator with specialized expertise in disaster recovery. Because the PlateSpin Forge disaster recovery hardware appliance ships with hardware, storage, replication software, management console and virtualization hypervisor preconfigured, the company—with the help of the Novell regional partner—was able to install and run PlateSpin Forge in the New York data center in less than one hour.

The company utilized the product's intuitive Web interface to identify a mix of physical and virtual server workloads to be protected and began replicating workloads to the PlateSpin Forge appliance as a virtual warm standby environment. PlateSpin's immediate notification of failure to mobile devices, such as the BlackBerry, and single click-over failover capability provided the company with a dramatically improved recovery time of minutes—rather than the days and weeks the company had traditionally experienced with tape-based solutions.

The company initially identified 12 key Windows server workloads to be protected and determined the desired replications schedule for each, ranging from hourly to weekly, based on the desired recovery point objectives. In subsequent phases of the project, the company was able to add additional sets of workloads to be considered, leveraging existing PlateSpin Forge resources.

Using our embedded virtualization technology, the company set up a virtual private network to conduct quick and effective recovery tests to verify the integrity of its recovery plan. The company was able to review all of the test reports and logs for future verification and also gained a suite of preconfigured reports to provide ongoing analysis of the PlateSpin Forge recovery environment. In the event of an outage, protected workloads can be rapidly recovered and continue to run on the PlateSpin Forge appliance until they can be restored to the production environment.

By consolidating multiple physical and virtual workloads onto a single recovery appliance, the company was able to achieve a 25-to-1 workload protection ratio with no need for costly investments in duplicate hardware and software for one-to-one redundancy. PlateSpin Forge from Novell requires near-zero configuration and ships with everything the company needed to begin protecting workloads—for considerably less than if it had purchased and configured these components separately. The speed and ease with which the company is able to recover using PlateSpin Forge makes the solution extremely attractive as the company looks to improve its recovery time and point objectives across a broad range of server workloads.

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Scenario 3: Green IT

Today, people everywhere are focusing on green, environmentally friendly solutions. IT is no different: Businesses are looking for a way to reduce their carbon footprint, lower power costs and get the most out of their equipment. With Novell, companies can cut energy consumption, reducing the money they spend on heating and cooling. They can also use resources more efficiently to avoid purchasing more equipment. All these measures ensure that your company is helping itself while helping environment.

Customer Situation

A non-profit environmental organization was leasing most of its desktops, laptops and servers. It was also manually tracking its hardware and software inventory—a time-consuming process for a small IT staff. To increase productivity and decrease its impact on the environment, it wanted a scalable, enterprise-quality solution, but was hoping to find one that would align IT with the organization's environmentally friendly goals. In addition, the organization was seeking a solution that would eliminate manual processes, such as hardware tracking and software inventory. The small IT staff was swamped and needed help streamlining inventory, managing assets and completing other daily tasks. As a small organization with a mixed IT environment, the organization had increasing hardware and software licensing costs to deal with and knew that moving to Linux could help.

The Solution

Using technologies from Novell, the organization can now create virtual servers. It is running a virtual server on existing machines rather than having to purchase several additional machines, and the organization also has the high availability benefits of a virtual environment. With our virtualization solution, the company can now take full advantage of its hardware investment and has reduced its hardware costs by 30 percent. The company can now get the most out of its hardware and can support extra workloads without a large increase in cost and maintenance.

Our solution has enabled the organization to create virtual server-based technologies that work on a variety of hardware. Virtualization has also helped the company achieve server utilization of over 90 percent in its hosted data center. The organization estimates that it is doing with four servers what most companies do with 50. The organization's virtualized servers have reduced the amount of floor space the company needs. The company has used Novell technologies to create "smart" servers that know when they are not being used and automatically shut down. Not only does automatic shutdown reduce the amount of power used, but the heating and cooling needed to meet server temperature requirements are also significantly lowered. So in addition to the cost savings the company is realizing, it is also furthering its own cause because it is eco-friendly within its own walls.

In addition to better hardware utilization and server consolidation, the company is also using Novell solutions to relaunch many of its Web sites. To date, the company has already seen dramatic improvement in its Web performance as its home page load time decreased by 130 percent. The organization moved its Web infrastructure to Novell products for a cost 75 percent less than that of a proprietary UNIX® or Windows solution. Consolidating Web servers by 85 percent with virtualization technology has reduced hardware costs by 30 percent. By leveraging open source software, the company has dramatically reduced its software costs, contributing to an overall IT budget reduction of 18 percent.

These cost savings have allowed the organization to reallocate IT budget so it can focus on what's really important—protecting the environment. And with the help of Novell, the company is already well on its way to contributing to that goal.

“We were pleasantly surprised at how easy it is to set up a virtual server with Xen. We are already seeing how this will dramatically reduce the size of our data center, as well as our power and cooling costs.”

Kurt Johnson

*Network Administrator
First American Title Holding Company*

“The PlateSpin solution saved Essent about €2 million for the data center consolidation project alone. However, the real savings are invisible. PlateSpin made it possible to complete our data center consolidation without any costly business disruption and reduced the risk of such a large scale IT initiative to an acceptable level. Although it's difficult to put a price tag on business continuity, the value to our organization over time could easily be in the order of hundreds of millions of euros.”

Marco Spoel

*Project Manager, IT Infrastructure
Essent*



ENTERPRISE LINUX SERVERS



Serving up rock-solid reliability. Linux server operating system software runs a variety of workloads in the data center, from basic Web and network infrastructure to mission-critical applications and databases. We offer this solution that is built on SUSE Linux Enterprise, the best-engineered and most interoperable platform for mission-critical computing.

This platform is the only Linux distribution endorsed by both Microsoft and SAP, ensuring complete interoperability with Windows and maximum support for SAP. With these capabilities and the services of Novell and our partners worldwide, you can deliver mission-critical IT services—with enhanced security and reduced costs—while improving data center reliability and performance.

**Scenario 1:
UNIX to Linux Migration**

**Scenario 2:
Mission-Critical Linux**

**Scenario 3:
Linux for Mainframes**

**Scenario 4:
Real Time Linux**

**Scenario 5:
Virtual Machine Guest**

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Scenario 1: UNIX to Linux Migration

You want a server platform that can do it all and do it well: run a variety of enterprise services while lowering costs, increasing flexibility and freedom, and delivering maximum reliability and performance. A decade ago, you might have chosen traditional UNIX, but older UNIX systems can no longer run the latest generation of IT services competitively. Organizations worldwide are rejecting costly UNIX maintenance and upgrades in favor of the open source computing model and Linux.

Customer Situation

A weather agency in Asia relies on its mixed-platform systems to provide timely and accurate weather information around the clock. The agency's computer systems are complex, consisting of multiple platforms for both weather forecasting and climate prediction.

In recent years, the agency has expanded its services to more customers and regions. As a result, the old communication system was insufficient to meet the agency's needs. It needed a high-performance infrastructure to ensure data integrity, reduce system administration costs and prevent downtime.

The agency's UNIX infrastructure, consisting of disparate platforms from SCO and two other vendors, also placed a burden on the IT staff. Administration and maintenance costs were high, with IT staff spending a significant amount of time and effort trying to improve system performance.

The Solution

The agency recognized that to streamline its IT operation and improve its service, it needed to move to a more cost-effective, open system. The new system should deliver the reliability, performance and scalability of UNIX but with lower total cost of ownership, better interoperability and greater flexibility. The agency evaluated several Linux distributions and ultimately selected Novell as its Linux provider, to ensure the stability and performance of its communication system.

Because the migration was a complex process, the agency worked directly with Novell Services to perform a workload inventory, skills assessment and much more. Then, once the assessment phase of the migration was complete, Novell helped the agency set up a Migration Program Office. This office ensured that the company had the support it needed throughout the migration process. In addition, we provided dedicated, on-site engineers and 24x7x365 phone support—so the agency always had access to people knowledgeable about its specific environment.

This new communication system uses Novell software to run more than 80 servers. IT staff can easily scale systems as requirements change. And with the unique and open management capabilities of our solution, based on SUSE Linux Enterprise Server, the agency's IT staff can easily install, configure and update Linux servers securely, anywhere on the network, without a drop in service and without downtime.

In conjunction with our partner's hardware, UNIX to Linux migration capabilities from Novell have allowed the agency to run its mission-critical applications without interruption—the first priority in an industry where incorrect decisions can result in lost lives. This combination has also improved the agency's server management strategy. Novell helped the agency automate many data center management tasks, such as maintenance, subscription and support renewals, as well as the provisioning and deprovisioning of virtual machines to adjust to changing workload demands. IT staff members can finally focus on creating new solutions instead of performing routine management functions.

And to ensure the agency could effectively use its new resources, we offered Advanced Technical Training online. Virtual classroom technology allowed the agency's engineers in diverse locations to attend a single course—*Migrating from UNIX to SUSE Linux Enterprise Server*. This training allowed for a smooth transition to the agency's new platform.

By migrating its outdated UNIX environments to a solution based on SUSE Linux Enterprise Server, the agency minimized downtime and increased security and timely access to information. It also reduced its administration costs by 70 percent because the Novell solution uses policy-driven automation to deploy, manage and maintain Linux resources.



"We had more than 10 years of experience with UNIX, so moving to Linux was a logical step. The transition was relatively easy, since our employees could use their existing skills with very little re-training required."

Matthias Haidekker
Head of Data Center
FRITZ EGGGER GmbH & Co.

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Scenario 2: Mission-Critical Linux

Many of today's leading enterprises are turning to Novell to achieve outstanding reliability, performance and scalability on a wide range of hardware platforms. Whether you are looking to deploy mission-critical applications and database services on x86, IBM POWER, Itanium or IBM System z hardware, we address the most demanding requirements. You can take advantage of the best availability, performance, low latency and security, and do so at the lowest cost of ownership with mission-critical Linux based on SUSE Linux Enterprise Server.

Customer Situation

A large transportation center is required by international law to provide a number of navigation services. These services are mainly focused on controlling the flow of air traffic and accepting, processing and forwarding flight schedules. The organization had developed a flight control system that was so fast, efficient and stable that it replaced all previous systems and was quickly installed at numerous airports. Most of the organization's applications were running in a proprietary UNIX environment, but it decided to move the flight control system to Linux.

The Solution

The organization chose SUSE Linux Enterprise Server as its strategic platform for all flight control workloads, and also decided to port many of its other applications from UNIX to Linux. By choosing SUSE Linux Enterprise Server, the organization avoided additional investment in proprietary platforms that fostered vendor lock-in, and instead achieved dramatic gains in price/performance.

In an industry where incorrect or delayed decisions could result in loss of life, maintaining high availability for systems is the number one priority. To ensure its systems are always available, the organization has implemented a high availability clustering solution with SUSE Linux Enterprise Server. This solution provides the same mission-critical reliability of proprietary high availability solutions but at a much lower cost of ownership.

The stability of SUSE Linux Enterprise Server greatly contributed to the success of the new flight control system. The new system, running on SUSE Linux Enterprise Server, has been so successful that the organization has been able to market the software to other air navigation agencies.

The organization is also planning to leverage the open source virtualization capabilities in SUSE Linux Enterprise Server, which offers industry-leading interoperability and performance. By consolidating multiple workloads onto a single physical server, the organization will be able to increase server utilization, maximizing its existing and future hardware investments. It will also make it easier to manage separate development, test and production environments, and to rapidly deploy new environments.

Although cost considerations were secondary, the organization is still saving hundreds of thousands, if not millions, of euros on licensing fees. It is able to achieve these savings because SUSE Linux Enterprise Server offers enterprise-class reliability and performance at the lowest cost of ownership, and because it delivers proven virtualization capabilities at no additional cost.

“Our entire Web environment is running on the IBM mainframe, with SUSE Linux Enterprise Server performing the HTTP and application serving tasks. SUSE Linux Enterprise is the ideal platform for our needs, offering stability, flexibility, scalability and easy management.”

Peter Wesel,
Chief Organizer IT
Statistik Austria

“The SUSE Linux Enterprise solution is helping us cut costs, improve security and reduce downtime—giving us all the benefits of our previous UNIX and Windows infrastructure with none of the disadvantages. Moreover, the successful collaboration between Novell Services and our in-house team made us certain that Novell would be the right partner for our organization. Novell Services deserves a lot of credit for helping us deliver the project rapidly and successfully.”

He Jun
Project Manager
ZTE Corporation



“By running new applications on SUSE Linux Enterprise Server on the mainframe, we have avoided buying several additional mid-range servers and implementing all the associated physical networking. With the CICS transactions, WebSphere and SUSE Linux Enterprise Server systems all running on the same physical server, we have a single point of control which helps to reduce the total IT management workload.”

Paul Nicholls
Enterprise Systems Manager
EBS

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Scenario 3: Linux for Mainframes

Consolidating your servers is one of the most effective ways to reduce IT costs. And one of the most cost-effective platforms on which to consolidate workloads is Linux on the mainframe. Many of today's large enterprises use mainframes to run their mission-critical workloads. Consolidating workloads running on standalone servers (that often access mission-critical data on a mainframe) onto the mainframe provides advantages such as low input/output overhead and improved security. When you choose SUSE Linux Enterprise Server running under z/VM on a mainframe for server consolidation, you are leveraging a host of powerful technologies. You can take advantage of the resiliency of the mainframe, the power of the best-engineered Linux distribution and the hypervisor capabilities of z/VM. This enables you to create a virtual environment that lowers total cost of ownership, reduces data center complexity, increases flexibility and reduces downtime.

Customer Situation

As the financial industry moves from paper to electronic-based transactions, financial institutions are tasked to handle enormous volumes of electronic data. This shift is requiring them to make significant investments in security, network capacity, system performance and storage, which can significantly impact IT budgets.

A financial institution was weighed down with the costs of managing 500 servers, including 30 Sun Solaris boxes with 60 processors, and multiple operating platforms. To keep pace with company growth, the institution was adding servers at the rate of 25 percent a year, and every 20 servers required additional administrative staff. The institution turned to SUSE Linux Enterprise Server running on a mainframe to get its expanding and expensive infrastructure under control.

In addition, as a financial institution with thousands of clients, the company needed to be sure it had a mission-critical solution. It simply could not afford to have downtime. It needed a solution that would eliminate downtime costs and deliver business value.

The Solution

To replace its UNIX environment, the institution chose to partner with Novell and IBM for a solution built on SUSE Linux Enterprise Server for System z running on an IBM System z mainframe. The executives at the institution knew they wanted a mainframe environment and decided that SUSE Linux Enterprise Server for System z was the best Linux distribution for the IBM mainframe. Linux was a viable solution because it gave them the ability to scale across platforms, on mainframes, PCs and more. In addition, Novell has strong relationships with companies such as IBM and SAP, which made the company feel comfortable about implementing this solution.

In its previous environment, the institution had a nearly one-to-one ratio of machines to applications, and yet each machine was utilizing only a fraction of its processing power. Using virtualization, the institution was able to consolidate 30 Sun Solaris servers to five, Integrated Facility for Linux (IFL) specialty processors on an IBM System z server. In this system, each IFL was running multiple, virtual instances of SUSE Linux Enterprise Server for System z. The institution also migrated the remaining 500 servers to 60 IBM Blade Servers. With this solution, the institution was able to consolidate all Sun servers and still have room to grow on the mainframe.

Virtual Linux servers in the five IFLs run all of the institution's mission-critical Web applications for financial services. The institution has over 500,000 on-line users and a large percentage of these users visit a Web site twice a month on payday to pay their bills. It was critical for the institution to respond to increased transaction volumes on those days without having to pay for excess capacity.

With fewer physical servers to manage, the institution has dramatically reduced its security risks as well as its IT administration costs. Virtual Linux servers give the IT staff flexibility to respond quickly to business requests, and fewer people are needed to manage physical devices. The institution can now quickly create virtual Linux servers, rather than having to acquire and configure an expensive new server. By standardizing on Linux, the company can grow rapidly without the need for additional IT staff.

By migrating its UNIX environment to SUSE Linux Enterprise Server for System z running on IBM hardware, the institution consolidated its environment by more than 90 percent. It also has reduced its administrative costs by more than 60 percent and reduced software licensing costs by more than 90 percent.

Overall, the institution saved \$1.5 million in operating expenses its first year and estimates a savings of \$9.4 million by 2011. Most important, the institution can easily handle business growth and increasing transaction volumes with the ability to set up Linux virtual servers in hours. It is no longer limited by technology; rather, the technology allows the institution to grow while keeping the budget stable and even decreasing it.

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Scenario 4: Real Time Linux

Many large organizations today rely on time-dependent applications and processes, which must execute accurately and predictably without fail. This is why organizations are turning to Novell to ensure high-quality performance in time-critical environments. You can maximize revenue opportunities and lower infrastructure costs. It allows you to increase the availability of your critical workloads and processes, meet your service level agreements—even under heavy system loads—and improve hardware utilization.

Customer Situation

An international medical equipment company was experiencing delays and downtime in the performance of its high-field MRI products. To keep costs down for providers and patients alike, the company needed to expand its processing capabilities without the added costs of upgrading its entire system.

MRI technology often operates in time-critical situations and is necessary for precise patient care because it shows details that are not visible with other imaging techniques. It was imperative that the operating system function without interruption and deliver top-notch performance at the millisecond level to ensure quality image resolution.

The Solution

To implement the necessary upgrades and provide patients with shorter exam times, increased comfort and higher image quality, the company chose Novell for its real-time computing needs. Customers now have guaranteed performance—they no longer have to worry about delays during important procedures.

Novell delivers proper deterministic real-time behavior on Linux without a separate interface. This means it is user friendly, facilitating diagnostics and tuning of the complex software that delivers real-time performance. Our technology integrates seamlessly with other operating systems, delivering guaranteed performance in time-critical environments. And with more applications calling for real-time delivery of higher resolution images, the company is able to stay at the top of this highly competitive market.

The company was able to leverage its existing infrastructure because SUSE Linux Enterprise Real Time is supported on both 32-bit and 64-bit processor architectures. Moreover, it achieved guaranteed interrupt response time of less than 30 microseconds because our products give full control of operating system priorities to the user. They are engineered to make sure that, once a high-priority process is started, nothing interrupts it or pulls computing power away from it. This proven real-time technology has eliminated the company's latency spikes, ensuring consistent performance and stability. It has also allowed the company to bring together medical technologies, health care information systems, and management consulting and support services to help customers achieve tangible and sustainable outcomes, both in the exam room and the boardroom.

Backed by proven open source technology, Novell helps the company lower costs, achieve guaranteed performance and increase stability. Ultimately, our technologies help physicians make sound medical decisions based on high-performing technology.



"The performance of SUSE Linux Enterprise has been tremendous. We can deploy servers and applications with confidence in our 24x7 business where downtime is not an option. With an IT environment of our size, we carefully monitor the performance and service levels. I can't remember an issue with SUSE Linux Enterprise that has affected our ability to support the business."

Tim Toews

Senior Vice President and CIO
Office Depot

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Scenario 5: Virtual Machine Guest

Your future IT environment will include a mix of technologies, so it's important to focus on interoperable solutions that deliver flexibility and value. When you virtualize workloads on SUSE Linux Enterprise Server, you can benefit from all three major hypervisors—at your own pace and with the support of Novell, VMware, Microsoft and the Xen community. Based on extensive collaboration with the three major hypervisor providers, Novell has designed SUSE Linux Enterprise Server to be the perfect guest operating system for virtual machines.

Customer Situation

A global media corporation operates several subsidiaries around the world. As part of a two-year update of the corporation's IT infrastructure, it began to consolidate and virtualize hundreds of servers. To achieve this goal, the corporation had been using VMware ESX Server for testing and development and had begun rolling it out in production in limited fashion.

The corporation was also evaluating SUSE Linux Enterprise Server from Novell for several mission-critical applications, including ERP and its public Web site. While the IT staff was evaluating SUSE Linux Enterprise Server, it became impressed with the Xen hypervisor delivered as part of the operating system. After further research, it realized that SUSE Linux Enterprise Server offered a high performance, highly manageable, open source virtualization solution for a fraction of the price of alternatives.

In addition, the corporation announced it would acquire another organization, one that was already testing Microsoft Hyper-V and had decided to deploy it in production. This global media corporation now faced the challenge of managing an environment with all three virtualization hypervisors—VMware ESX Server, Xen from Novell and Microsoft Hyper-V—in harmony, while keeping cost and complexity under control.

The Solution

While the corporation wanted to ensure that all of its virtualization technologies were being used efficiently, it also wanted to make optimal use of its resources. The IT staff needed a way to create a semblance of standardization without discarding the multiple virtualization host technologies it had already begun adopting.

The corporation realized it could improve the manageability and performance of its virtual machines by standardizing on SUSE Linux Enterprise Server as its default guest operating system. Extensive collaboration between Novell and the three hypervisor providers (VMware, Microsoft and the Xen community) has made SUSE Linux Enterprise Server the best choice for running virtual workloads across all three leading hypervisors.

To achieve its server consolidation efforts, the corporation took advantage of the cooperation between VMware and Novell, which has resulted in VMI (Virtual Machine Interface) support for paravirtualization in SUSE Linux Enterprise Server. Using Novell technologies, the corporation achieved greater performance of its virtual machines and ultimately was able to consolidate more servers.

In addition, the corporation chose to leverage SUSE Linux Enterprise Server with Xen to achieve near-native virtual machine performance. Not only does Xen offer top performance and better value than other solutions, but it is also fully supported by Novell, giving the corporation the help it needed to navigate the consolidation and virtual migration process.

Finally, the corporation wanted to benefit from the collaboration between Novell and Microsoft to ensure its new subsidiary was aligned with the corporation's overall IT strategy. Because Microsoft and Novell operating systems have been certified as supported guests on each other's hypervisors, the corporation now has unparalleled choice and flexibility with its new acquisition. Through the work of the joint Novell and Microsoft Interoperability Lab, the corporation can run SUSE Linux Enterprise Server "enlightened" on Hyper-V. Even better, SUSE Linux Enterprise Server is fully supported by Novell and Microsoft in this virtualized environment, giving the corporation the confidence to deploy SUSE Linux Enterprise Server guests in production on Hyper-V.

Through our infrastructure software and ecosystem of partnerships, Novell harmoniously integrates mixed IT environments, allowing people and technology to work as one.

Mixed IT environments are a reality for almost all organizations, and we understand that you can't let this reality undermine your ability to compete. We enable businesses around the world to manage their mixed IT environments, helping them reduce cost, complexity and risk. Whatever solutions you're looking for—Data Center, Identity and Security, or End-User Computing—we have the tools to connect people to performance and business possibilities. Let us make IT work as one for you.

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