

MICROSOFT SPECIAL EDITION

Unleashing IT

VOLUME 4 / ISSUE 1

INNOVATION FOR THE PEOPLE

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Unleashing IT

VOLUME 4 / ISSUE 1

AN UNBEATABLE TRIAD

Operational efficiency and cost savings. Data-driven business insights. Organizational agility and market differentiation. Enterprises in every industry are pursuing such gains, but they cannot be achieved with a fragmented, siloed technology infrastructure.

Technological integration doesn't happen overnight, of course. It takes years of behind-the-scenes teamwork and engineering—backed by decades of expertise, research, and development—to have a broad and lasting impact.


This special edition of *Unleashing IT* highlights the fruits of those labors, showcasing the unparalleled alignment of Microsoft, Cisco, and Intel technologies. In the following pages, you'll read about the advancement and unique value of integrated solutions, spanning cloud environments (page 3), data centers (page 4), and management tools (page 10). You'll also hear from organizations that are taking advantage of these converged technologies, including King County (page 12), Provincia Net (page 14), and Swinburne University (page 11).

With Microsoft, Cisco, and Intel, you have a triad of innovators and leaders that recognize the value of integration, virtualization, and unified management. A triad that continues to work behind-the-scenes to reduce the complexity and increase the capability of enterprise solutions.

For more information, follow the links inside or contact Cisco at 1-800-553-6387 and select option 1 to speak with a Cisco representative. We welcome your feedback on the articles in this publication at www.UnleashingIT.com.

Sincerely,


Jim McHugh
 Vice President
 Cisco Systems, Inc.


Shannon Poulin
 Vice President
 Intel Corporation

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COVER:
 Bill Kehoe,
 CIO, King County



ACCELERATING PRIVATE CLOUD SUCCESS

ESG analyst Mark Bowker describes the ideal private cloud, and the unique value of integrated solutions.

In a recent Enterprise Strategy Group (ESG) paper¹, senior analyst Mark Bowker listed several requirements and best practices for building a private cloud. High levels of availability and scalability, policy-based automation and application control, workload portability, and unified visibility and management across infrastructures and applications were all cited as desirable attributes.

Put them together, and enterprises may have the perfect cloud.

“Roughly 50 percent of companies now have a private cloud of some sort,” says Bowker. “Not every company needs all of those capabilities, but they are certainly enviable qualities that can help an IT organization move from a cost center to a business enabler.”

With a robust private cloud, IT groups can “act like a true business partner, providing business-critical applications at the speed of business,” he explains. They can eliminate routine tasks, put more time and resources toward differentiating services and applications, and serve the business better and faster than ever before.

And now, the onus is on business teams to match the pace.

“The business hasn’t always adapted as fast as IT, and that’s one of the biggest hurdles when it comes to private clouds and modern technologies in general,” Bowker says. “IT groups have responded very quickly with new capabilities and resources, but in many cases, business processes are still slow.”

With self-service capabilities delivered through a private cloud, for example, many IT departments have reduced the time it takes to purchase and provision compute, storage, and networking resources from weeks to hours. But if business processes still demand a number of sign-offs and proverbial red tape to approve the request, the time efficiencies—and business opportunities—can be squandered.

INTEGRATED SOLUTIONS SPEED UP TIME TO VALUE

One way to attain a rock solid cloud and get both IT and business groups up to speed quickly, Bowker suggests, is through the use of integrated solutions.

“IT pros pride themselves on their ability to bring many disparate pieces together and make it all work, but they need to look at private clouds differently,” he says. “Building your own cloud may work for some, but for most, using solutions with integrated hardware, software, and management tools will make more sense. There is less risk, more predictability, and faster time to value.”

Bowker points to Cisco and Microsoft as two companies that have joined forces to “blaze a best-of-breed path,” making it easier and more compelling for companies to adopt a private cloud. With Microsoft’s Windows Server 2012 R2, the Intel® Xeon® processor-based Cisco Unified Computing System™, and validated designs like FlexPod, organizations can take advantage of a fully integrated, pre-engineered



cloud solution. Better yet, it delivers a single operating system and unified management tools that serve three environments: virtual machines, on-premise private clouds, and off-premise public clouds.

“A hybrid model with a mix of private and public cloud resources is inevitable for most companies, and this is where Cisco and Microsoft really excel,” says Bowker. “Other providers use completely different tools for private and public clouds, so there is no consistency and no way to run efficiently in a hybrid environment. With Cisco and Microsoft, it’s the same management and provisioning tools for both private and public clouds, which gives better visibility and control, and more consistency and flexibility.”

With a tightly integrated cloud solution that provides standardization from the operating system to the management tools all the way down to the hardware components, IT groups can focus more on process optimization and business evolution than systems building and administration. They can begin to align their back office solutions with cloud-like consumption models. And they can take advantage of public cloud resources when and where it makes sense, without giving up visibility, control, or workload portability.

“Clearly, IT organizations are eager to embrace these integrated infrastructures to make private cloud environments harbingers of positive change for their companies,” says Bowker. “That’s why these two companies have come together and developed a best-of-breed private cloud ecosystem that combines Cisco’s compute and network expertise with Microsoft’s single operating system, data management, and virtualization capabilities.”

And it may just be the perfect private cloud.

¹ Enterprise Strategy Group, “Building a Private Cloud: Cisco and Microsoft—Optimized Infrastructure Strategies”

GET THE PAPER

In a recent ESG white paper, analyst Mark Bowker outlines private cloud best practices.

To access the paper, visit the resource center at UnleashingIT.com.

SUPPORTING MODERN APPLICATIONS AND DATA



Experts from Cisco, Microsoft, and Intel discuss the rising importance of data center integration, automation, and orchestration.

There's no denying the increasing value of data and the growing criticality of business applications. But to fully take advantage of them, industry leaders say three things are necessary: data center integration, automation, and orchestration.

"Countless IT departments are transitioning their focus from systems to applications and data," says Jim McHugh, vice president of unified computing and data center marketing at Cisco. "But this transition requires more intelligence, automation, and integration of data center technologies, from the cloud to the edge where applications and data are consumed."

By and large, applications and underlying infrastructure systems have been tightly bound. According to Garth Fort, general manager of cloud and enterprise marketing for Microsoft, these bindings have created rigid dependencies and limitations.

"Applications have been hard coded in ways that set deep roots into the infrastructure," Fort says. "To increase flexibility and business value, applications need to be abstracted from the infrastructure."

The rise of cloud environments and the global, dynamic business landscape now demand such flexibility, he explains. Organizations may want to move an application or workload between on-premise and cloud environments, for example, for performance, security, utilization, or data sovereignty purposes. And they may need to do so quickly as business needs change. That's where integration and automation come into play.

"Data centers have been extremely siloed, requiring a lot of human intervention to align systems, define the data, transfer packets from point A to point B, and then dictate what the

receiving system does with those packets,” says Shannon Poulin, vice president of data center marketing at Intel. “There hasn’t been a lot of intelligent ‘talking’ and decision making between machines, just hand-offs. With more devices, systems, environments, applications, and data, manually facilitating each interaction is no longer realistic. There needs to be a greater level of orchestration and automation.”

FROM FASTER TO SMARTER

The IT industry has long sought to make infrastructure systems faster and more economical, but now there is a push to make them smarter and more coordinated.

“The highly manual approach of the past is giving way to more intelligent, policy-driven models,” says McHugh, “which automate infrastructure provisioning based on the needs of applications.”

“Virtualization is the key,” Fort adds. “It’s the down payment for policy-driven orchestration and a smarter, more dynamic data center that works hand-in-hand with cloud environments.”

According to Poulin, companies shouldn’t hesitate to extend virtualization beyond servers.

“Many companies have virtualized their compute resources and seen the benefits firsthand,” he says, “and now they have an opportunity to do the same with their storage and network resources.”

LEARN MORE ABOUT INTEGRATED INFRASTRUCTURE

The emergence of integrated infrastructure has been swift, with the full stack of data center technologies being combined into pre-engineered, tested, and supported systems that operate as a whole.

For a white paper on the industry’s shift to integrated systems, common applications and use cases, and Cisco’s approach, visit the resource center at UnleashingIT.com.

McHugh, Fort, and Poulin all recommend working with vendors who work together—those that offer tightly aligned systems with intelligence and automation from the processor all the way out to the applications and data at the edge.

“It starts with the silicon, the infrastructure, the operating system, and the applications,” says Fort. “That’s why Microsoft works so closely with Cisco and Intel.”

“Our engineering teams have developed validated designs that deliver tight integration and coordinated intelligence from the infrastructure to the applications,” McHugh adds. “That means more automation, more consistency, more flexibility, and less risk.”

IDC: BUSINESS PROCESSES MUST EVOLVE ALONGSIDE TECHNOLOGY

Enterprise technologies have changed dramatically in response to and in support of a more competitive and dynamic business environment. But according to industry watchers, business teams and operational processes haven’t been as quick to evolve.

“Companies have accelerated the deployment of new applications,” says Matt Eastwood, vice president and general manager of the Enterprise Platform Group at IDC, “but many have yet to realign their people and processes with those new services and capabilities.”

Applications have always been tightly aligned with business processes, he explains. But they have moved from the back office to the frontlines, not just supporting the business but driving it forward.

“Business is more reliant on technology than ever before,” Eastwood says. “If you don’t embrace change—not just

technology change but organizational and process change—you can place your business at a real disadvantage.”

This change doesn’t start with new applications or services, but with new thinking. What type of business do you want to run? How will you deal with a disruptive, fast-paced market? How will your company become a digital company? In Eastwood’s view, “every business will be a digital business” in the near future.

While new applications and services can support the answers, they can’t provide the answers. Those need to come from the highest levels of an organization.

“Technology is easier to change than people and processes,” says Eastwood. “Business transformation must start with management and spread throughout a company, not just its data center.”

For more information, visit UnleashingIT.com.

EXTENDING THE VALUE OF VIRTUALIZATION



END-TO-END OPTIMIZATION

An architecture built and tuned specifically for virtualization can boost IT management, scalability, and performance.

To learn more, watch the on-demand webinar at the UnleashingIT.com resource center.

Why and how the benefits of virtualization are being pushed beyond the server.

Server virtualization has emerged as a mainstream technology in recent years, and for good reason. The benefits—more efficient use of servers, faster implementation, lower maintenance costs, and portability of workloads—are simply too compelling. According to Jeff Woolsey, principal program manager for cloud and enterprise at Microsoft, roughly half of all workloads that have come online since January 2014 have been virtualized, and existing physical workloads are rapidly being migrated to virtual environments.

“Virtualization is ubiquitous,” Woolsey says. “It doesn’t make sense to run new workloads on a physical server.”

Server virtualization creates an image, or virtual machine (VM), that exists on a physical server, mating compute resources, input/output (I/O), and memory. This abstraction makes the VM independent of the physical device—dozens can run on a single physical server, and VMs can be moved from machine to machine seamlessly.

BUILDING ON INTERACTION

Server virtualization is built on the interaction of three components: The multicore, hyper-threaded processor, which determines how many virtual machines are viable; the computing and networking platform, whose random access

memory (RAM) availability is also critical to workload density; and the hypervisor, the software that manages the VMs. Their integration is critical, and Intel, Cisco, and Microsoft have been collaborating to ensure the pieces of the puzzle fit together.

The integration of the Intel® Xeon® processor-based Cisco Unified Computing System™ and Microsoft's Hyper-V hypervisor gives organizations the tools to wring those business benefits out of a virtualized environment—often by moving workloads out of the data center.

Intel has been refining its server processors to optimize their performance in a virtualized environment since its Pentium 4 micro-architecture was released in 2005, according to longtime Intel engineer Tiags Thiyagarajah.

“Intel provides a set of new instructions and capabilities for virtualization,” Thiyagarajah says. This optimizes performance in hardware virtualization, networking virtualization, and directed access to server-side devices, he says. It also supports Hyper-V-specific second-level address translation (SLAT), which reduces the memory overhead needed in a Hyper-V-managed environment.

WORKLOAD PORTABILITY

A workload can be moved to any computer that can run Hyper-V and Microsoft System Center, whether it's on a laptop in the same office, a mirroring data center for disaster recovery and business continuity, an associated branch office, or a cloud provider. Organizations can create hybrid clouds, keeping certain data and processes in-house for performance and governance reasons, while moving others to an outside provider for scalability. It's a process called “shared-nothing live migration”—moving a VM from one machine to another without having to provision storage.

“Hybrid cloud is integral to Microsoft's strategy,” says Woolsey. “At the end of the day, we want customers to be able to run workloads where it makes business sense.”

NO BOUNDARIES TO VIRTUALIZATION

Virtualization also allows software-defined storage (SDS), which offers users access to all of an organization's disparate data resources within a single window, regardless of their physical location, says Woolsey.

In fact, it's hard to see a boundary for the potential use of virtualization. Virtual desktop infrastructure (VDI) allows mobile devices to run applications without exposing sensitive data. New communications systems are being built on Network Function Virtualization (NFV), which turns nodes and functions into basic network building blocks. Network appliances like firewalls can now be virtualized in a physical host. Virtualization will even reach your car, as workloads are handled in a VDI-like fashion.

“There's no end to what applications can be moved to a virtual environment,” Thiyagarajah says.

VIRTUALIZATION'S “THREE-LEGGED STOOL”

According to Joe Martin, consulting systems engineer with Cisco, virtual performance is dependent on a “three-legged stool” of components within the physical machine: processor core count, LAN and storage input/output (I/O), and available random access memory (RAM).

“Cores are critical to being able to slice up jobs inside a server,” Martin says.

Processors exist with as many as 18 physical cores today, and Intel's Hyper-Threading technology allows more than one VM to run on a single core efficiently. That has a direct relationship to density, or the number of virtualized workloads that can run on a single physical host machine. Multisocket servers can boast up to as many as 120 logical cores today. And that has an impact on total cost of ownership, Martin says.

Virtualization performance isn't dependent on the processor alone. “If you can afford it, go ahead and buy the biggest and baddest hardware,” says Microsoft's principal program manager for cloud and enterprise, Jeff Woolsey. But the key is balance among those three legs of the stool. “Make the biggest investment you can in memory,” Woolsey says—it has a huge impact on performance.

The Intel® Xeon® processor-based Cisco Unified Computing System™ platform offers up to a massive 6TB of RAM per server. There is also a sophisticated Windows PowerShell toolkit to allow the automation and configuration of the physical infrastructure, along with the host operating system, Hyper-V environment, and applications, through Microsoft's System Center management platform suite. System Center profiles and balances virtual machines on servers for the best performance “to make sure you don't try to put 10 pounds into a five-pound bag,” Martin says.

LEARN MORE

For an on-demand webinar about overcoming the challenges and maximizing the benefits of virtualization, visit the resource center at UnleashingIT.com.

NOT YOUR FATHER'S DATABASE



Raj Gill, president and founder of Scalability Experts, describes the evolution of database technologies and the immense value to be found within big data.

Raj Gill has been working with databases since the early 1990s. The president and founder of Scalability Experts, which provides data management and business intelligence services to more than 500 companies worldwide, has experienced the swift evolution of database technologies firsthand.

“Databases have come a long way,” Gill explains, “from simple back office repositories to the nerve centers they are today. Everything a company does is now stored in a database, including the data and intellectual property that define and differentiate a brand.”

Look no further than the modern business landscape to understand why databases have changed so dramatically in such a short amount of time. The fast, global, hypercompetitive nature of business has placed a greater demand on data, and fundamentally altered the function and criticality of database technologies.

“Data is more important and valuable than ever before,” says Gill. “And companies aren’t just interested in mining their own information sources. They are increasingly hungry for external data culled from social media, mobile devices, sensors, and industry sources.”

That’s why databases can no longer be straightforward repositories, he explains, and they can no longer be tied to a single data type, system, or function. They must be able to handle the growing volume, variety, and velocity of modern data sets—sometimes called the “three Vs.” And they must not only help a company analyze the past, but make better decisions in the present and predict the future.

“The companies that are able to take advantage of the ‘three Vs’ will be able to create competitive differentiation, serve their customers better, and carve out new market niches,” Gill claims. “Data mining and predictive modeling represent huge opportunities for every business.”

OPTIMIZE SQL SERVER

For a white paper on why Cisco UCS is the optimum platform for SQL Server 2014, and a TPC-H benchmark brief, visit the resource center at UnleashingIT.com.

BIGGER ENGINES, NEWER CAPABILITIES

To take advantage of these opportunities, bigger computing engines with more processing, storage, and I/O are needed. Gill points to the Intel® Xeon® processor-based Cisco Unified Computing System™ as a prime example. He’s also bullish on the latest database solutions like Microsoft SQL Server 2014, which delivers in-memory performance across all workloads.

“Databases of the future will run almost entirely in-memory,” he says. “And the software must work in harmony with the hardware. That’s why the tightly aligned systems being developed by Microsoft, Cisco, and Intel are so compelling.”

These pre-validated solutions can accommodate many different types of data, they can handle petabytes of information, and they can deliver fast, powerful search and analysis capabilities. In other words, they are built for the “three Vs.”

But there is no single recipe for success; no database that automatically pulls value from the data sets within.

“Companies need to know what they want to accomplish with their data and build their data models and analytical capabilities accordingly,” Gill recommends. “If you don’t know the goals or define the key business outcomes, big data can become a science project instead of a business project.”

Scalability Experts can help define big data strategies and roadmaps, and works closely with leaders like Cisco and Microsoft to implement database architectures and technology infrastructures that support overarching business objectives.

“It’s a very exciting time for database designers, data scientists, and the businesses they serve,” says Gill. “It’s an opportunity to transform how they look at data, make decisions, and push their company forward.”

SQL SERVER 2014: POWERFUL, INTELLIGENT, AND READY FOR THE HYBRID CLOUD

With SQL Server 2005 nearing the end of its support lifecycle and more companies using the cloud for data storage and backup, many are looking into the latest version of Microsoft's popular data platform. According to database experts, there's a lot to like about SQL Server 2014.

"Microsoft has been laser focused on mission-critical application performance, business intelligence, and support for hybrid cloud environments," says Frank Cicalese, technical solutions architect for Cisco, "and all of those attributes can be found in SQL Server 2014."

With in-memory technology, SQL Server 2014 delivers breakthrough performance for business applications, while also boosting security, scalability, and auditing. With new intelligence capabilities that tie directly into data stores, it enhances the ability to analyze workloads and glean insights from any data source. And with a common set of tools for deploying and managing databases both on-premise and in the cloud, it eases the transition to the hybrid cloud without sacrificing compliance.

"SQL Server 2014 is very appealing for companies moving their databases to the cloud, or pushing their backup

data to the cloud," says Cicalese. "And it delivers security and auditing capabilities that are often required for compliance."

As data types and usage scenarios continue to change, Microsoft is expanding the functionality and flexibility of its data platform, he adds. A column store function in SQL Server 2014, for example, allows users to manage and query their data in new ways.

"More organizations have been interested in object databases, document databases, graphical databases, and functionality for specific types of data and specific situations," says Cicalese. "SQL Server 2014 shows that Microsoft is moving toward a less relational, more flexible database paradigm."

See why SQL Server 2014 and Cisco UCS® are better together by accessing the Optimizing Microsoft SQL Server 2014 on Cisco UCS white paper at the UnleashingIT.com resource center.

SQL SERVER AND CISCO UCS: BETTER TOGETHER

Cisco technical solutions architect Frank Cicalese is adamant that Microsoft SQL Server and the Intel® Xeon® processor-based Cisco Unified Computing System™ (Cisco UCS®) are greater than the sum of their parts. Here are Cicalese's top six reasons for deploying them together.

- 1. Less risk.** "With Cisco UCS' service profiles and a stateless architecture, SQL Server workloads can be back up and running in five to seven minutes in the event of failure," he says, "regardless if they are virtualized or bare metal."
- 2. More standardization.** "Server administrators can configure service profile templates specifically for their SQL Servers," explains Cicalese, "and foster consistent standardization of their SQL Server implementations throughout the enterprise via these templates."
- 3. Better workload management.** "Cisco UCS has very tight integration with Microsoft System Center," he says, "allowing administrators to monitor, manage, and maintain their SQL Server implementations proactively and efficiently on the platform."

- 4. More consolidation.** "Companies implementing large, virtualized SQL Server workloads on other blade systems often run out of I/O and have to add more blades or ports," Cicalese explains. "Cisco UCS provides large amounts of compute and memory as well as converged adapters for better consolidation and performance."
- 5. Less complexity.** "Cisco UCS is a highly integrated infrastructure with centralized management tools that work closely with Microsoft System Center," he says, "reducing configuration and administrative complexity."
- 6. Better end-user experience.** "The Cisco UCS architecture can greatly enhance database implementations by empowering knowledge workers with self-service capabilities that are critical to their role," Cicalese notes.

See why SQL Server 2014 and Cisco UCS are better together by accessing the Optimizing Microsoft SQL Server 2014 on Cisco UCS white paper at the UnleashingIT.com resource center.

SINGLE PANE OF GLASS: MYTH OR REALITY?



The swift proliferation of complex and highly specialized data center systems has led to the equally swift proliferation of management tools. It's not uncommon for IT organizations to have dozens of tools to control dozens of systems, with scant integration and coordination among them.

"IT departments can get very specialized and siloed," says Mona Hrapkowicz, data center software specialist at Intel. "But in today's day and age, you can't be myopic and focus on one piece of the data center. You must focus on the business holistically, and that requires more integration and orchestration—not just with the tools, but with people and processes."

The promise of a "single pane of glass," an all-in-one tool for systems administration, has emerged as a potential panacea. But does it exist today?

THE NEED FOR UNIFIED MANAGEMENT

According to Joe Martin, consulting systems engineer for Cisco, companies have been struggling with the sheer volume of management tools and a lack of visibility across data center systems.

"Without a holistic view of the entire environment, how can you diagnose problems? How can you orchestrate and automate at a higher level?" Martin opines. "Companies want as few tools as possible to manage their environment, and they want these tools to work well with one another."

Application Programming Interfaces (APIs) have enabled such integration, facilitating policy-driven control and automation among different elements of an infrastructure. Policies can now be implemented at the application layer, for example, that dictate how the underlying infrastructure behaves in support of each application.

"Vendors like Cisco, Microsoft, and Intel have developed APIs that expose the hardware, software, and processing layers of the environment," says Vijay Tewari, cloud platform program manager

for Microsoft, "allowing each system to be managed individually, but in a way that is coordinated with other systems."

He points to Microsoft System Center and the Intel® Xeon® processor-based Cisco Unified Computing System™ (Cisco UCS®) as a prime example. Cisco UCS Manager provides unified, policy-based management of Cisco UCS servers and fabric components, Cisco UCS Director extends that control and automation to storage and virtual environments, and both work in concert with Microsoft System Center.

"The integration between Microsoft System Center and Cisco UCS allows exceptional service management automation, monitoring, and command and control—for hardware and software, in both bare metal and virtual environments," Tewari claims. "This is possible because of the deep APIs on both sides."

THE VERDICT

So, is the single pane of glass a myth or a reality? Perhaps it's a bit of both.

"There is no single pane of glass for every conceivable function of an IT environment," notes Mark Balch, director of product management for unified computing at Cisco. "But we do provide a single pane of glass for infrastructure management that works hand-in-hand with Microsoft's single tool for managing the software and application layer."

"There is more integration, more visibility, and more coordination among management tools than ever before," says Tewari. "And that allows organizations to simplify their IT operations and make better use of their data."

"We've made huge strides," Hrapkowicz adds. "The joint innovation and engineering between Cisco, Microsoft, and Intel have dramatically reduced the complexity of data center management while increasing the support for mission-critical applications and hybrid cloud deployments."

WATCH THE VIDEO

See what Microsoft executives are saying about Cisco UCS.

To access the video, visit the resource center at UnleashingIT.com.

A photograph of three business professionals—two women and one man—sitting around a small white table in a bright, modern office setting. They are looking at a tablet held by one of the women. Large, bold, orange text is overlaid on the bottom half of the image.

WORKLOAD OPTIMIZATION FROM DAY ONE

For Australia's Swinburne University of Technology, a stable and predictable data center is key to the university's learning environment, and also its reputation.

Just as restaurants must have appetizing food and retailers must have desirable products, universities specializing in science, technology, and innovation must have rock solid technical underpinnings. After all, reputation is paramount in higher education, where online universities and global commoditization have created fierce competition for students and faculty.

That's why it was so important for Australia's Swinburne University of Technology to upgrade its former data center systems—which were not performing as expected—and adopt an infrastructure that would be more stable, secure, and predictable. One that would improve the performance of current applications and allow the university to focus on new student services instead of ongoing technology fine tuning.

"Ultimately, we wanted a storage and compute solution that we knew would work for our prescribed workloads from day one," says Daniel Buttigieg, associate director of infrastructure at Swinburne.

This "day one" readiness came in the form of a pre-configured, pre-validated design. Instead of cobbling together an array of vendor systems, Swinburne chose FlexPod, an integrated infrastructure solution that features the Intel® Xeon® processor-based Cisco Unified Computing System™, Cisco Nexus® switches, and NetApp storage. The university's new infrastructure is virtualized with Microsoft Hyper-V software.

"FlexPod's pre-validated designs directly addressed our concerns and gave us the confidence that the environment was

tried and tested and would support our workload requirements immediately," Buttigieg says. "We can focus on education services and not worry about whether the technology works together."

FlexPod doesn't just deliver stability and predictability, he adds. It also offers the scalability needed to support the university's growing number of users, devices, and applications. And the flexibility of the virtualized environment enables the university to easily deploy new student services and hybrid learning programs, which feature a combination of on-campus and online curriculum.

"Don't underestimate the advantage of a solution that the vendor has validated to meet your workloads and function as you require it," Buttigieg recommends. "Not only will it reduce your implementation time, but it lessens the organizational risk in making the purchase at all."

THE ROI OF FLEXPOD

To access a Forrester Total Economic Impact Study on FlexPod, as well as a FlexPod solution brief, visit the resource center at UnleashingIT.com.



LEFT: King County CIO Bill Kehoe is delivering new citizen services, including a mobile app for public transportation.

A MODEL OF CIVIC POSSIBILITY

With a standardized infrastructure and service-driven model, King County has aligned its departments and IT resources in support of its citizens.

When you serve nearly two million people across 2,134 square miles, perhaps technology sprawl, high costs, and operational inefficiencies are inevitable. But they are not irreversible.

This is the story of King County, which encompasses Seattle and surrounding areas along the beautiful shores of Washington State's Puget Sound. Like many government bodies, King County's decentralized approach to technology systems and services had created a monster: 28 data centers and 17 independent IT departments, each deploying its own server and storage infrastructure, and doing so excessively in anticipation of growth and capacity spikes. Duplication of effort, mismatched technology standards, 10 to 15 percent utilization, glacially slow system and service deployments, and high costs were the norm.

"We were very siloed, and that created a lot of overhead and inefficiency," admits Bill Kehoe, CIO for King County. "We needed to transition to a standardized, centralized services model."

The county did just that. First, Kehoe and his team defined 17 unique services—from applications and workstations to project management and regional networking—with rates and methodologies for each one. Then they created a standard virtualized environment (SVE) using Microsoft Private Cloud technology and FlexPod, an integrated computing, networking, and storage platform that takes advantage of the Intel® Xeon® processor-based Cisco Unified Computing System™.

"Standardization brings tremendous benefits, from lower costs to better utilization to faster acquisition and deployment," says Kehoe. "In the past, we were a cost center and county departments didn't know what they were getting for their dollar. Now they know exactly what they are getting, exactly how much it costs, and we can deliver it in hours instead of months. Our departments have flocked to the SVE."

By standardizing on FlexPod, King County has consolidated 28 data centers down to two. It has reduced the size of its storage environment by 70 percent. And it is saving \$700,000 annually.

But this isn't just a story of technology consolidation and cost savings. It's one of governmental conscientiousness and accountability, of a county working hard to make more efficient use of tax dollars and engaging citizens in newer, better ways. And more than anything, it's a model of civic possibility.

A MORE PROGRESSIVE GOVERNMENT

Expectations have changed. People want greater access to information, quickly and on a variety of devices. They want more transparency and responsiveness from their government. And many are no longer willing to go to an administrative office and wait in line for answers and action.

"The brick and mortar government model," Kehoe claims, "is outdated."

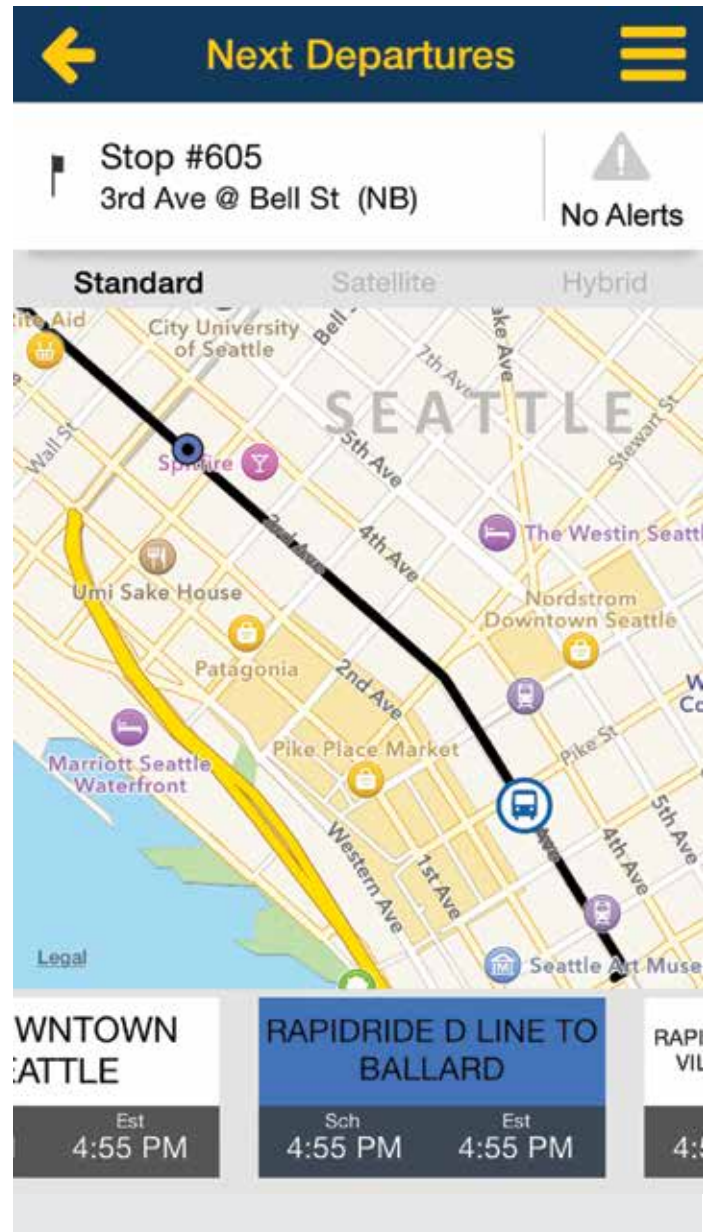
King County recently launched a new, all-inclusive website. What may sound elementary is "a big deal for us," says Kehoe, the culmination of months of work and an example of a more unified county working together in support of its citizens. Gone are the disconnected departmental websites that made it difficult for people to find information and interact with the county.

"We want to be a more progressive government," Kehoe explains, "and that means engaging with citizens in different ways. The SVE is the platform that makes it all possible."

It has also enabled a variety of new applications and services. A mobile app has made it easier for residents to use public transportation. An updated CRM system helps the county respond faster to citizens who need assistance. Video hearings are helping reduce paperwork and speed up property assessment cases. And a new 3-1-1 system is in the works that will provide greater access to non-emergency municipal services.

King County worked with technology partner Presidio to design and implement the SVE, and to make the move to a centralized, service-driven IT model. According to Kehoe, Presidio not only recommended the FlexPod platform, but brought Microsoft, Cisco, and NetApp to the table to ensure King County's success.

"Ultimately, we must be good stewards of taxpayer money, and IT should embody that ethic," says Kehoe. "We're consolidating and standardizing on a pre-validated, trusted technology solution and making better use of our investment and capacity. FlexPod with Microsoft Private Cloud allows us to extend services to citizens in a more reliable, secure, and scalable way. As public servants, that's what we are all about."



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Hybrid cloud computing is taking the enterprise world by storm. But why hybrid cloud, and why now?

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FLEXING THE MUSCLE OF A DATA CENTER

With one of Argentina's most advanced data centers, Provincia Net is delivering new services to an expanding customer base.

ABOVE: Provincia Net's Horacio Astesiano, Fernando Haring, and Martin Jauregui (right), with Cisco's Carlos Isla.

When you have one of the most sophisticated and powerful data centers in Latin America—with ample space for additional capacity—the opportunities for service delivery and business growth are virtually unlimited. You can, for instance, stream a live soccer game being played on the other side of the globe, serve it up to crazed fans for free, and collect a hoard of ad revenue. And perhaps that will just be an experiment, one idea for how the mighty data center will be utilized.

This is the rise of Provincia Net, which is emerging from the shadows of its parent company and aiming to be the premiere technology services provider in Argentina.

“Provincia Net is the fastest growing technology company in Argentina, with more than 500 percent growth and 200 new jobs created last year,” says Santiago Montoya, CEO of Provincia Net. “We offer services to both public and private sectors, and our goal is to improve the lives of citizens in the Province of Buenos Aires and beyond.”

Provincia Net was established some 13 years ago as the technology services division of Grupo Provincia, a collection of companies that includes South America's first bank. With demand for technology services increasing, company leaders made the decision in 2012 to build the finest data center in Buenos Aires and expand its services beyond Grupo Provincia.



Santiago Montoya, Provincia Net CEO

“It all started with the data center,” says Horacio Astesiano, general director of business and services at Provincia Net. “There is no other facility like it in Argentina.”

“The data center was designed to be 100 percent virtualized and software driven,” explains Fernando Haring, COO of

MEASURING THE VALUE OF CISCO UCS

According to a Forrester Total Economic Impact Study, organizations utilizing Cisco UCS can achieve 307% ROI and more than \$1.6 million in cost savings and benefits over a three year period.

To access the study, visit the resource center at UnleashingIT.com.

Provincia Net. “That means it is extremely flexible and we can meet a variety of customer needs and pursue new market opportunities very quickly.”

It’s also the only Tier II data center in Argentina to be certified by the Uptime Institute¹, and Provincia Net is currently working toward a Tier III designation. Built on the Intel® Xeon® processor-based Cisco Unified Computing System™ (Cisco UCS®) and utilizing Microsoft Hyper-V virtualization, the capabilities of the data center have been in high demand. What started with seven Cisco UCS chassis has expanded to 25 chassis in a single year, supporting 8,000 virtual machines (VMs).

“Cisco, Microsoft, and Intel give us a lot of comfort,” says Haring. “They have been instrumental in helping us build a data center that is powerful, reliable, and flexible. We have a lot of room to grow.”

EXPLORING AND EXPANDING CUSTOMER SERVICES

Many companies construct their technology infrastructure to satisfy existing requirements, but Provincia Net built its data center with growth in mind. Only 30 percent of the physical space is currently being utilized, with the potential to add another 50 Cisco UCS chassis and 14,000 VMs.

“Our data center is our commodity,” says Montoya. “There is a big need for technology services in Argentina, and we are uniquely capable of meeting that need.”

The data center has been a huge selling point, Astesiano adds.

“When customers see the facility, they are astonished,” he says. “They can’t believe the quality, the capacity, and the fact that it is 100 percent virtualized.”

Provincia Net currently offers infrastructure and cloud services, a bill payment and collection system, a hosted contact center, and a software factory specializing in mobile application development. With a desire to grow and improve the business and ample capacity in the data center, company leaders are exploring a number of new service options.

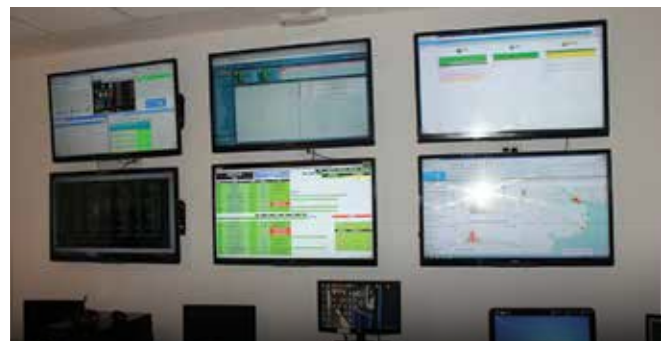
“We are planning to take advantage of the Cisco Intercloud, which gives us and our customers more choice,” says Martin Jauregui, manager of technology for Provincia Net. “Sometimes it makes sense to push client VMs to an external cloud for cost or compliance purposes, and the Intercloud will make that very easy.”

Provincia Net is also looking into social media services and big data analytics. And consumer services like sports and entertainment streaming have already been tested, with wild success.

The decision to stream a soccer game being played in Europe was made quickly. In just two days, the servers and network resources were provisioned for the match, with no need to deploy additional hardware. Sponsors gobbled up the advertising space, and tens of thousands of Argentina soccer fans watched the game live from their computers and mobile devices.

But it was just one experiment, one idea for flexing the muscle of a powerful data center.

¹ <http://uptimeinstitute.com/TierCertification/certMaps.php>





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