Innovate together

Cisco UCS Acceleration Initiative

We're not just making servers, we're making server history.

UCS Wins, Success Stories and Analyst Reports 2H FY 2011

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Construction Company Changes Data Center Economics

Tutor Perini Corporation built its new data center with Unified Computing System, reducing device count by 60 percent.

EXECUTIVE SUMMARY

TUTOR PERINI CORPORATION

- Construction
- Sylmar, California USA
- 7000 Employees

CHALLENGE

- Reduce data center operating costs
- Simplify management
- Ensure application availability

SOLUTION

- Consolidated servers, switches, and storage access from multiple data centers onto a single Cisco Unified Computing System
- Engaged Cisco Advanced Services for planning and deployment

RESULTS

- Reduced device count by 60 percent
- Reduced power consumption by 38 percent
- Minimized thin client costs by supporting up to 30 users per server

Challenge

Tutor Perini Corporation is a leading civil and building construction company offering diversified general contracting and design/build services to private clients and public agencies throughout the world. Its services include general contracting, pre-construction planning, and comprehensive project management. Tutor Perini also offers self-performed construction services, including excavation, concrete forming and placement, steel erection, electrical and mechanical services, plumbing, and HVAC. The company is recognized for its major complex building project commitments as well as its capacity to perform large and complex transportation and heavy civil construction.

Through mergers and acquisitions, Tutor Perini had acquired five data centers. The company decided to build a brand-new data center to be shared by all entities. Motives for consolidation included reducing operating costs, simplifying management, helping to ensure application availability, and expanding the thin client environment. “Our main requirements for a new computing platform were low costs, low energy consumption, and efficient management,” says James McGibney, data center lead, Tutor Perini.

Solution

After evaluating three leading platforms, Tutor Perini selected the Cisco® Unified Computing System (UCS), which unifies network, compute, storage access, and virtualization into a single, cohesive system. “When we did a side-by-side comparison, every person on our technical team agreed that the Cisco solution best met our business needs,” says Jason Morgan, senior network engineer, Tutor Perini. Unique advantages of the Cisco UCS included built-in support for VMware and the fact that Cisco was already a trusted vendor for all of Tutor Perini’s business divisions. “The Cisco UCS pricing was surprisingly competitive and the technology integrates very well with our storage area network and Cisco switches,” says Edward Quiroz, director of infrastructure and help desk services, Tutor Perini.

The world's first organization to deploy the Cisco UCS, Tutor Perini configured it with four chassis, 22 server blades, and two Cisco 6120 Fabric Interconnects. The system currently connects to 83 terabytes of data in an Ethernet environment.

The Cisco UCS can still be managed as a single entity when configured with up to 40 chassis. To size it correctly, Tutor Perini's IT department added up the compute requirements for all of its member companies and then added another 30 percent to account for expected growth over three years. "Cisco Advanced Services minimized risk by looking over our design and collaborating with us to validate our sizing assumptions for server blades and memory," says Morgan. "Working with Cisco Advanced Services gave us the confidence that we could implement a new technology and meet our strict deadline."

Tutor Perini has already moved three data centers' applications to the new data center, using VMware products to transfer servers, virtual machines, and data over the network. "The deployment was very smooth, which is unusual for a brand-new technology," says McGibney. "Cisco Advanced Services worked side-by-side with us to deploy the Cisco UCS and was instrumental in our success. They also made sure that the Cisco UCS operated well with our network infrastructure and storage."

Results

Ongoing Cost Savings

Tutor Perini compared the five-year costs of purchasing and operating a Cisco UCS to upgrading its existing systems, calculating that the investment will pay for itself in 36 months. Factors contributing to lower costs include:

- **Equipment consolidation:** "In data centers, less is more, and the Cisco UCS requires less cabling, less power, less cooling and, most important, less overhead," says McGibney. Tutor Perini is consolidating from 230 servers and 75 network devices to four Cisco UCS chassis with integrated switching and management, reducing its hardware footprint by 60 percent. Just two data center rows support up to 7500 users.
- **Increased server utilization:** "With Cisco UCS, we anticipate being able to deploy four times as many virtual machines per VMware ESX host as we did previously, and to achieve 90 percent CPU utilization," says McGibney.

> "With Cisco UCS, we anticipate being able to run four times as many servers on a VMware ESX host as we did previously, and to achieve 90 percent CPU utilization."
>
> **—James McGibney, Data Center Lead, Tutor Perini Corporation**

- **Simplified cable management:** The Cisco UCS has only four cables. Cable management was an ongoing challenge in the previous environment. "With its integrated network and storage access, Cisco UCS required the fewest cables to purchase and manage of any platform we evaluated," McGibney says. Having fewer cables also improves airflow, which reduces power and cooling costs.
- **Lower energy consumption:** The Cisco UCS uses 38 percent less power than Tutor Perini's previous equipment, which the company says will result in significant ongoing savings.

Simplified Management

"Cisco technology is stable and well understood, reducing management burden," says McGibney. "I have worked with Cisco routers and switches for 17 years, both in the Department of Defense and in private industry." Using Cisco UCS Manager service profiles, the IT department provisioned 22 new VMware ESX hosts and their I/O properties in just three hours. Ongoing management is simpler as well, because IT staff can manage the Cisco UCS chassis,

blades, and Cisco 6120 Fabric Interconnects from one interface. “It saves me time to use the same interface for tasks ranging from creating virtual machines to investigating if a processor overheats,” says Morgan.

High Performance

In a virtual environment, the application experience for employees depends more on memory than processing power, according to Morgan. “The Cisco UCS uses two instead of three memory slots per channel, which results in steady application performance even when demand is high,” he says. In fact, the slowest processing speed for the Cisco UCS is 33 percent faster than it is with the other servers (1066 MHz instead of 800 MHz.) “The Cisco UCS can support 30 users per server in our environment with good performance, far more than the other platforms we evaluated,” McGibney says.

High Availability

The redundancy built into the Cisco UCS helps to ensure that critical business applications and a customer web portal remain available. That’s important in the construction industry, where teams working to finalize a bid before a deadline can’t afford for a server or network link to be down. Tutor Perini employees have experienced uninterrupted application access since the system was deployed. In the event of a future failure, automatic failover will help ensure that users can continue working while the IT department works to fix the issue.

> “Cisco Advanced Services minimized risk by looking over our design and collaborating with us to validate our sizing assumptions for server blades and memory. Working with Cisco Advanced Services gave us the confidence that we could implement a new technology and meet our strict deadline.”
>
> **—Jason Morgan, Senior Network Engineer, Tutor Perini Corporation**

Support for Thin Clients

Thin clients are appealing in the construction industry because of short laptop life in dusty environments and concerns about theft on construction sites. Currently, about 20 percent of Tutor Perini employees use thin client devices instead of PCs. Tutor Perini allocated some Cisco UCS blades to virtual machines and others to thin client applications. “The Cisco UCS will enable us to take advantage of the favorable economics of thin clients because of its scalability and the high performance of the Intel Xeon processor 5500 series,” says McGibney. As more employees use thin clients, performance will remain steady because blade memory can scale up to 384 GB.

On-Time Deployment

“Cisco knew we were on a tight schedule and they delivered,” says Kenneth Stringer, vice president of information services, Tutor Perini. “My team and I are very pleased with the product and the company.” Quiroz adds, “The Cisco Advanced Services team took our project to a level of partnership I have not seen before.”

Next Steps

Tutor Perini is continuing to migrate existing applications and data to the new consolidated data center. The IT department plans to more than double the number of thin-client users, begin using VMware View, and convert 90 percent of its servers to virtual machines. The company is also planning a disaster recovery site.

For more information about the Cisco Unified Computing System, visit: http://www.cisco.com/go/unifiedcomputing.

For more information about Cisco Advanced Services, visit: http://www.cisco.com/go/advancedservices.

Large Multidisciplinary University Regains Control of Desktop Applications

Seattle University puts educational needs first with unified computing and virtual desktop systems.

EXECUTIVE SUMMARY

SEATTLE UNIVERSITY

- Higher Education
- Seattle, Washington, USA
- 7751 undergraduate and graduate students; 1381 faculty and staff

BUSINESS CHALLENGE

- Short desktop computer lifecycles, difficult management of the desktop application environment, and high operating expenses
- Inability to meet specific, real-time software application requests from professors, students, and college deans
- Disconnect between desktops, applications, and data within the data center

NETWORK SOLUTION

- Implement state-of-the-art Cisco Unified Computing System technology optimized for VMware and Virtual Desktop
- Enable server management from single screen using unified computing system

BUSINESS RESULTS

- Ability to deploy specific software applications and business requirements for any educational or administrative department on demand
- Faster response times to students, teachers, and faculty to help meet educational and administrative needs
- Conversion of lab machines to virtual desktops, decrease in operating expenses, and prolonged desktop lifecycle

Business Challenge

Seattle University (SU) is a Jesuit Catholic school located on Capitol Hill in Seattle, Washington. SU is the largest, independent, multidisciplinary university in the Northwest, with 7751 students enrolled in undergraduate and graduate programs. SU was ranked the seventh best school in the Western region in *U.S. News & World Report's* "Best Colleges 2010" list, based on its full range of master's and undergraduate program offerings. "SU is one of the most culturally diverse, genuinely urban universities in the Northwest region," says Bob Dullea, vice president of University Planning for Seattle University. "We are dedicated to educating the 'whole' student into professional formation, and empowering leaders for a just and humane world."

University officials wanted to continue advancing as one of the top schools in the nation and provide state-of-the-art technology and equipment to the campus community. They found it increasingly difficult to keep the nearly 20 campus computer labs and over 1500 desktop computers synced on a uniform software program. The aging equipment, software, and network were difficult to upgrade because the original software packaging was manually installed and updated for specific academic courses through a time-intensive process. "It was difficult for us to upgrade each computer lab and expensive in terms of hardware, software, and labor costs," says Daniel Duffy, chief technology officer for Seattle University. "These were some of our motivating factors to begin looking for a modern virtual desktop infrastructure."

Seattle University managed hundreds of educational applications on hundreds of servers. In many cases, each application required a dedicated server, even if the application used a small portion of the server's available physical central processing unit (CPU). Overall, computing resources were not being used efficiently. The university's IT department tried to maintain the growing number of servers for deployment, monitoring, and maintenance. There were also associated resources such as electrical power, cooling, rack space, cabling, and support personnel that needed an efficient

management system. Additionally, student, faculty, and staff members had to travel to campus computer labs to have access to the campus environment.

SU identified multiple technologies and vendors to scale and optimize a heterogeneous virtual desktop infrastructure, including long-term university partners. “In the end, Cisco’s approach was the most professional, by far,” says Duffy. “They had an alignment with their technology and our vision that could not be beat. The updated system was deployed September 18, 2009.”

Network Solution

To overcome these data center challenges, SU worked with Cisco to deploy virtualized servers and other related Cisco® technologies for networking and data center management. Instead of the traditional design where one application runs on one physical server, a single physical server can now host multiple virtualized servers (also called virtualized machines) and support multiple applications from a single device.

Seattle University uses VMware as the foundation for server virtualization in the data center. VMware supports the creation of virtualized servers, each potentially using multiple CPUs and multiple gigabytes of memory. The number of CPUs and memory can be modified easily as applications grow, and university technicians can relocate virtualized servers between physical servers to accommodate an application’s changing demands for computing resources. “We have a 48-acre college campus with lab environments from one end of the campus to the other, with a mechanism for testing and short-term deployment of late software requests from faculty,” says Duffy. “The new system requires significantly fewer technicians to upgrade, thus shortening the testing time and personnel needed considerably.”

VMware provides the software that students would use in a regular classroom, regardless of which computer they decide to use on campus. Each time a student logs onto the server, it builds a “new” virtual machine. Files can be saved on the shared drive, “My Documents,” or on a thumb drive, and will be readily available on any campus desktop computer when needed.

Server virtualization also allows multiple operating systems to be installed on a single physical server. Each application runs on a standard, dedicated operating system, and only the physical server resources are shared among the operating systems or applications. This design increases overall use of the physical hardware without sacrificing application availability, reliability, or integrity.

In addition, Seattle University relied heavily on Cisco Services, along with Cisco Gold Certified partner INX, to install and integrate the new technologies into its existing infrastructure. “The Cisco Services team played a key role in ensuring the success of this project,” says Duffy. “They worked side-by-side with our IT team and INX throughout the planning, design, and implementation phases to make sure we had the best architectural design and the smoothest deployment possible.”

Business Results

"We are now managing open computers in 17 of the 32 educational and administrative buildings, residence halls, and student areas on campus," says Duffy. "We have plans to grow into the other buildings as well. The online solution is literally without boundaries. We cut down on the amount of people deploying software in multiple areas for specific classroom needs and requests. The Cisco Unified Computing System provides centralized management across campus to modernize our learning environment."

"We cut down on the amount of people deploying software in multiple areas for specific classroom needs and requests. The Cisco Unified Computing System provides centralized management across campus to modernize our learning environment."

—Dan Duffy, Chief Technology Officer, Seattle University

Students and faculty can access computer lab machines from their dorms and other offsite locations through the high-speed internet connection linked to the virtual desktop infrastructure.

University technicians also cleared physical space on campus by reducing the need for additional computer labs. "On every college campus, space is at a premium," says Dullea. "The ability to provide software to our campus community and not require the students to come to a facility has allowed us to avoid the extra costs associated with building more computer labs."

The university's student-run newspaper, *The Spectator,* has quoted student and faculty members regarding their approval of the new technology implementations in some of its issues. Many express they are "getting more for their tuition money," and the school is able to respond to their needs faster and easier than before. Student reporter Carolyn Huynh wrote, "Imagine having Mathematica, SPSS Accounting Software, Microsoft Word and a plethora of other academic resources right at your fingertips without having to spend thousands of dollars…the new software should lessen crowding in labs, save students money, and allow them to work from where they are more comfortable."

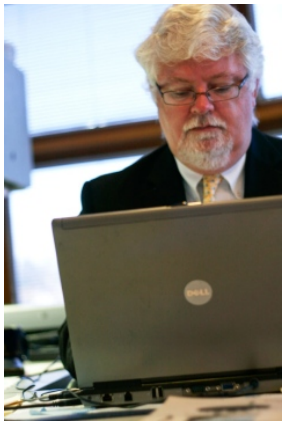
Huynh quotes freshman business and computer science major Kenneth Ordona, who says, "I like that I don't have to spend millions of dollars on purchasing expensive software for all my classes when I can just get them anytime I want."

"The impact of desktop virtualization on our student population is immense," says Duffy. "We don't have to expand the brick and mortar of our campus; rather, we have taken better advantage of the physical resources we already have in place. The fact that we could simplify the management of our software licenses, be more focused on individual student needs, better support effective teaching and learning practices by installing a unified computing system into our existing data center infrastructure gives this project a unique functionality."

Next Steps

“We definitely see much more opportunity in how we will use our virtualized environment,” says Duffy. “We know we just scratched the surface and are recognizing the benefits of the technology on the academic side. Moving forward we plan to pursue administrative applications, disaster recovery opportunities and business continuity programs.”

Figure 1. Seattle University’s chief technology officer Dan Duffy believes VMware and a virtualized desktop infrastructure will improve students’ experiences in classes within every college on campus.



PRODUCT LIST

Network Management

- Unified Computing System
- Virtual Desktop Infrastructure
- Cisco Unified Computing System 5100 Series Blade Server Chassis

For More Information

To find out more about the Cisco Virtual Desktop Infrastructure, go to: http://www.cisco.com/en/US/netsol/ns978/index.html

To find out more about the Cisco Unified Computing System, go to:

www.cisco.com/go/unifiedcomputing

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Future-Ready Infrastructure Powers Premium Entertainment Experience

Cisco UCS enables Cisco Media Solutions Group to deliver next-generation content service.

EXECUTIVE SUMMARY

CISCO MEDIA SOLUTIONS GROUP

- Media and Entertainment
- San Francisco and San Jose, CA
- 65 Employees

CHALLENGE

- Cisco Eos helps media companies retain and add value to digital content by delivering new and engaging audience experiences
- Cisco Media Solutions Group needed a scalable, resilient, and efficient architecture to power the Cisco Eos social entertainment platform

SOLUTION

- Cisco Unified Computing System and Data Center 3.0 architecture

RESULTS

- 10x compute power
- 75 percent reduction in space
- 33 percent reduction in energy

Challenge

When R&B music artist Trey Songz premiered his latest music video in November 2009, he encouraged fans to share the video virally through Twitter and Facebook. They responded with great enthusiasm, and within a few hours, page views to his website had soared to ten times the daily average. For Warner Music Group's Atlantic Records label, this event generated the single largest hour of traffic for the year, across all artists and websites. Behind the scenes, the Cisco Eos® social entertainment software platform, developed by the Cisco Media Solutions Group (CMSG) and run on Cisco UCS servers, handled the traffic surge with ease.

Cisco Media Solutions Group (CMSG) was founded in 2006 to help media companies deliver new digital experiences such as fan communities and social entertainment. CMSG's Cisco Eos® social entertainment software gives media companies access to advanced technology while reducing the overall cost, complexity, and risk of building their own internal solutions. Built on a standards-based architecture, Eos functionality can be extended to other IP devices and services to follow the consumer to the device, location, and time of their choice.

By integrating social networking, content management and analytics capabilities into a single hosted application, CMSG helps media companies engage their target audiences and turn an elusive new medium into sustainable and profitable businesses.

One of the most important differentiators of the Eos platform is its ability to scale. To create engaging audience experiences, the application needs to deliver hundreds of websites to millions of audience members at any given time. Whether site visitors are downloading viral videos or watching the Olympics, the infrastructure must deliver every time.

Less than one year after launching with its first customers, CMSG converted Eos to the Cisco Unified Computing System™ (UCS) and Data Center 3.0 architecture for a more scalable, resilient, and efficient infrastructure.

Solution

In October 2009, Eos became the first hosted web application to go live on UCS. Cisco's Advanced Services (AS) team played a critical role in the architecture, design, and deployment. Working with the CMSG Operations team, the AS team was able to take product-based reference architectures, shape them into a design that would fit the needs of Eos, and build in the ability to scale the Eos platform easily as well as to take on new platforms with minimal effect to the underlying infrastructure.

"The first Eos data center took hundreds of hours to set up; with UCS, we finished in less than 80," says Craig Holland, senior manager of operations for CMSG. "And in the process, we gained ten times the compute power for half the space and one-third less energy."

UCS brings several benefits to the Eos platform: Its wire-once, connect-to-anything unified network approach is more flexible, less complex, and less costly than traditional models. UCS lowers capital expenditures by requiring fewer switches, cabling, and adapters. It also lowers operating expenditures by using less power, cooling, and space due to a reduction in the number of separate devices that are needed. Most importantly, UCS has proved that it can handle the inevitable spikes in consumer traffic that define a successful online marketing effort. Its ability to add cold capacity on demand makes it an excellent candidate for anyone who needs an elastic computing environment and has the desire to integrate with other cloud offerings based on UCS, virtualization, or other cloud platforms.

The Advanced Services team essentially built a Platform-as-a-Service (PaaS) offering, which is now available to other business units inside Cisco that need similar services and operational processes. The Eos experience has enabled the AS team to deploy these types of architectures with confidence, because they were able to vet the designs and learn the operational challenges that are inherent in such a complex offering.

> "We eventually realized that we are dependent on technology, but we are not a technology company, so using a platform through a strategic partnership is a very desirable approach."
> **—Michael Nash, EVP, Digital Strategy and Business Development, Warner Music Group**

Results

"Cisco Eos allows artists like Trey Songz to maintain direct relationships with their audiences," says Dan Scheinman, senior vice president and general manager, CMSG. "Thanks to Cisco Eos, powered by Cisco UCS, our customers no longer need to worry about the underlying infrastructure of the platform, and they don't have to operate data centers. They can return to the business of developing great content as media companies."

Since August 2009, media companies like Warner Music Group have deployed more than 40 Eos-powered websites generating approximately 2 million unique visitors per month and consuming several million minutes of media content. Cisco Eos has proved itself each time traffic reaches a new peak.

The rock band Paramore's (www.paramore.net) site is a good example of what Cisco Eos enables. Paramore was immediately able to establish a more direct relationship with its fans, obtaining more than 35,000 registered users within weeks of the site launch. Paramore has been able to turn that fan interest into economic opportunity and recently sold 4300 super premium content bundles in a week for $39.99 each.

According to Warner Music Group, its Eos-powered websites are 25 to 30 percent more engaging than other WMG sites. This means that, on average, visitors are spending more than eight minutes per visit, compared with about six minutes on non-Eos sites. CMSG customers also enjoy fast time to market for their sites, as shown by WMG's ability to develop and deploy interactive artist websites five times faster than it used to.

"We wouldn't be able to deliver the full promise of Cisco Eos without UCS," says Scheinman. "UCS gives us the capacity and confidence to realize the vision."

With Cisco UCS as its backbone, CMSG has been able to provide a robust platform for its media clients to increase user engagement with "social" content such as Twitter feeds, lower the cost for site development and management, and ultimately aggregate audience and user data across multiple branded sites. This combination enables media companies to better monetize their premium content through multiple revenue streams such as advertising, e-commerce and subscription-based services. CMSG's customer list has grown to include Warner Music Group and

The Travel Channel, as well as music services firms Tenth Street Entertainment and All Access Today. Cisco Eos also will also be used by the London Organising Committee of the Olympic and Paralympic Games (LOCOG) to deliver new audience experiences for the London 2012 Olympic and Paralympic Games. The companies and brands that depend on Eos have the infrastructure they need to add real-time content from wherever they are, which means the content on these sites is fresher than if it lived on traditional websites.

"We are dependent on technology, but we are not a technology company, so using a platform through a strategic partnership is a very desirable approach," says Michael Nash, EVP, Digital Strategy and Business Development, Warner Music Group.

By cutting costs and opening up new revenue opportunities, Cisco Eos helps media companies achieve a higher return on investment (ROI) and lower total cost of ownership (TCO) than the alternative in-house approach. In a recent study, IDC interviewed executives at leading media and entertainment companies and built a model to describe the relative ROI and TCO associated with Cisco Eos versus do-it-yourself (DIY) solutions. This model found that companies migrating to Eos from an existing DIY solution at a total investment of $121,000 realize average cost savings of $162,000 over three years per website and generate $306,000 in additional net revenue for total benefits of $468,000, yielding an ROI of 280 percent. These companies regain their initial investment and then beyond that, they reap an additional $1.80 in benefits for every dollar invested.

Similarly, in a greenfield scenario with no preexisting installation, implementing Eos from scratch yielded an ROI that was higher by a factor of 8.2 compared with a DIY solution. The Eos case had a 197 percent ROI over three years compared with a 24 percent ROI for the DIY case.

> "By utilizing UCS and Cisco Data Center 3.0 technologies, we have been able to drastically reduce the number of devices we need to manage while increasing efficiencies, ROI, agility and our ability to manage our environment in a much more elastic and cloud-like way."
> **—Craig Holland, Sr. Manager, Operations, Cisco Media Solutions Group**

Next Steps

Less than one year since the deployment of UCS, Cisco Eos is well on its way toward becoming the web platform "of record" for media and entertainment companies. Warner Music Group continues to launch a new artist approximately every week, and several new customers are in the pipeline.

To accommodate this rapid growth, CMSG and the UCS team are building out a second data center on the East Coast of the United States by the second half of 2010.

The Eos operations roadmap includes such features as:

- Utilizing VMware to enable integration with third- party cloud compute offerings
- Taking advantage of the powerful CPU and large memory footprints of UCS to more than double a single server's ability to perform in any layer of the application stack
- Further leveraging UCS's ability to control blades to quickly provision and destroy compute resources automatically based on load and projections
- Leverage technologies found in the Cisco Nexus® 7K switch, such as 802.1ae, to securely tie together multiple data centers to allow for active/active use of multi-DC resources
- Implementing the Cisco Content Delivery System (CDS) to accelerate webpage delivery both from the data center and through the Internet

For More Information

To find out more about Cisco UCS, go to: http://www.cisco.com/go/ucs. For more on Cisco Eos, go to: http://www.cisco.com/go/media

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Financial Services Firm Secures New Advantage

Winterflood Securities deploys industry's first Cisco Unified Computing System, improving business operations and agility.

EXECUTIVE SUMMARY

Customer Name: Winterflood Securities

Industry: Financial Services

Location: UK

Company size: 190 employees

Challenge

- Respond to explosive growth in data volumes
- Quicker adaption to new market opportunities

Solution

- Cisco Data Center 3.0 vision, architecture, and technologies
- Cisco Unified Computing System

Results

- Data processing and scalability have been improved
- Trading applications can be deployed in hours rather than weeks
- Future server replacement costs were reduced by 90 percent

Challenge

Winterflood Securities is one of the leading liquidity providers in London, making markets in more UK stocks than any other firm. This success is built upon a highly experienced 90-strong trading team and the ability to offer its clients (brokers, asset managers, and institutional investors) low-latency, integrated electronic trading platforms and over 10,000 tradable instruments.

The introduction in Europe of the 2007 Markets in Financial Instruments Directive (MiFID) has resulted in significant fragmentation across the European marketplace. Winterflood plays an important role in helping its clients to successfully navigate this situation by providing access to new pools of liquidity and helping ensure 'best execution' (the optimal mix of price, speed, and certainty). Not surprisingly, this fragmentation has resulted in an explosion in trading volumes.

"Prior to MiFID, we handled around three to four million messages a day. Now, we're looking at 250 million, with peaks often passing 30,000 updates in a second. But it is not just about improving data processing and scalability. MiFID has also opened the door to many new entrants. With this in mind, our strategy was to research and introduce a platform that allowed for quicker implementation times while providing greater scalability, performance and reliability," says Philip Yarrow, director of electronic trading for Winterflood.

Winterflood's ability to meet these challenges was being constrained by a lack of flexibility and difficulties in scaling an estate of dedicated physical servers. Every time a new service was introduced, such as a new low-latency data feed, the IT team would invariably have to purchase new hardware. The hardware would then have to be pre-designed and pre-built for that particular function, before undergoing a three to four week soak test. These lead times could be extended even further if stability problems needed to be resolved.

> **"Our strategy was to research and introduce a platform that allowed for quicker implementation times while providing greater scalability, performance and reliability."**
>
> **–Philip Yarrow, Director of Electronic Trading, Winterflood**

Solution

Faced with the need to upgrade its VMware platform, Winterflood decided to step back and take a holistic review of its data center strategy.

"We have a Cisco end-to-end network infrastructure, which we like and know very well. In particular, their Technical Assistance Center (TAC) support is excellent and provides us with a huge comfort factor. In addition, we've also been monitoring the evolution of blade servers for a while. Therefore, the idea of closely integrating the two together was very attractive," says Wayne Davies, manager networks and infrastructure for Winterflood.

The first stage of this strategy has seen Winterflood implement the Cisco Unified Computing System™ (UCS), a next-generation data center platform specifically built to accelerate the virtualization process.

UCS is a key cornerstone within Cisco® Data Center 3.0, an architectural approach for data center evolution that uses a three-phase methodology: consolidate, virtualize, and automate. The end result is tighter integration of servers, networks, and storage systems, which in turn helps to deliver new improvements in performance and cost efficiency.

Powered by the latest breakthrough in Intel processor technology, the Cisco Unified Computing System is both economic and environmentally friendly. "The new Intel Xeon Processor 5600 series chips run a lot cooler and consume less power," says Davies.

Winterflood can also benefit from pioneering Cisco VN-Link technology that is embedded in the UCS blade servers. The virtual links communicate directly with the network interface cards and virtual interfaces on the parent switch, allowing quality of service and security to be managed on a per virtual machine basis.

Drawing on best practice experience gained through internal usage and other deployments worldwide, Cisco Advanced Services helped to plan, design, and implement the system. The engagement also included the delivery of a Startup Accelerator Service to speed Winterflood's deployment of the platform.

Components of the implemented solution include four Cisco Unified Computing System chassis (five blades in each); Cisco Nexus® 1000, 2000, and 5000 Series Switches; and Cisco Catalyst® 6500 Series 10 Gigabit Ethernet Switches.

Following an extensive three-month test, Winterflood has now started to move its key trading applications onto the system. "UCS allowed us to take a gradual and cautious approach to migration, which in a dynamic trading environment is very important. We began with the less critical systems and, as we became more familiar and confident with the solution, we started to move across suitable trading applications. UCS currently manages around 160 virtual servers," says Grant Davidson, head of IT for Winterflood.

The award-winning Cisco SMARTnet® technical support services place an extensive range of technical resources at Winterflood's disposal and help to maximize operational efficiency. These resources include proactive diagnostics and real-time alerts, around-the-clock access to the Cisco TAC, hardware replacement options, and ongoing operating system software updates.

Results

The Cisco UCS deployment, the first in the UK, is expected to deliver significant first-mover advantage to Winterflood Securities. Uniting computational, network, storage access, and virtualization resources in a single energy-efficient system will help the firm to reduce IT infrastructure costs and complexity, extend capital assets, and capitalize faster on new business opportunities.

> **"By carrying a spare blade in the chassis, our IT team can provision a new service overnight, so it is ready to go live in time for next-day trading."**
>
> **–Philip Yarrow, Director of Electronic Trading, Winterflood**

"Cisco UCS provides us with tremendous flexibility. By carrying a spare blade in the chassis, our IT team can provision a new service overnight, so it is ready to go live in time for next-day trading. All that is needed to tap into new markets in many cases is a simple configuration change. It's also great news for our customers who are looking for increased choice and best execution services," says Yarrow.

And the benefits provided by the on-demand data center architecture do not end there. The ability to configure once, and use many times on any blade also provides a path for consolidating server footprint. "The way the system is designed, we can extend our platform by segment or exchange. If we need to, we can dedicate a whole blade to a single stock, or we can re-allocate spare capacity on a blade that is being under-utilized," says Davidson.

While it is still early days, improving bridging and communications between the server, storage, and network management domains is also expected to deliver efficiency gains. Although each deployment is different, based upon Cisco's internal modeling and early customer data, the UCS can:

- Lower capital expenditure (CapEx) by as much as 20 percent
- Reduce operational expenditure by up to 30 percent.

Tighter integration of Cisco UCS Manager and VMware vCenter makes virtual machine movement more efficient and secure. This, in turn, decreases risk across the firm's IT-based operations by making it easier to balance workloads, increase availability, and implement disaster recovery strategies.

Next Steps

Looking ahead, Winterflood intends to improve server life-cycle management and maximize return on investment. "The Cisco Unified Computing System is our number-one platform choice. Before, when a server was approaching end-of-life, we would have been looking at spending somewhere in the region of £40-50K to replace it. Now, we can install and integrate it onto a blade for around a tenth of the cost," says Davidson.

PRODUCT LIST

Data Center

- Cisco Unified Computing System

Routing and Switching

- Cisco Nexus 1000, 2000, and 5000 Series Switches
- Cisco Catalyst 6500 Series 10 Gigabit Ethernet Switches

Services

- Cisco Advanced Services
- Cisco UCS Startup Accelerator Service
- Cisco SMARTnet Support

Healthcare Provider Increases Business Agility

Moses Cone Health System deployed Unified Computing System as part of the transition to electronic medical records.

EXECUTIVE SUMMARY
MOSES CONE HEALTH SYSTEM • Healthcare • Greensboro, North Carolina • 7600 employees
CHALLENGE • Adopt electronic medical records • Minimize infrastructure costs • Enable cost-effective growth
SOLUTION • Deployed Cisco Unified Computing System, engaging Cisco Advanced Services for planning, design, and implementation • Continued using existing storage area networks and Cisco MDS 9000 Multilayer Fabric Switches
RESULTS • Saved US$90,000 to implement 17th server • Reduced time to implement VMware ESX host from two days to one hour • Saved 96 hours on server configuration

Challenge

Based in North Carolina, Moses Cone Health System offers a range of services, including cardiovascular care, the latest cancer treatments, rehabilitation neurology, and trauma care, in both hospital and outpatient settings. In response to the U.S. economic stimulus program, Moses Cone Health System is accelerating its transition to electronic medical records (EMR) and Physician Order Entry (POE). To support EMR, the IT team is deploying Microsoft Amalga, a real-time data warehousing application designed for clinical data. The availability and flexibility of the computing system used to host Microsoft Amalga would be critical to success, because clinical staff planned to use the application to view and update EMRs and access Moses Cone Health System's other clinical applications, such as radiology and lab systems.

The IT department had already begun adopting server virtualization, using VMware ESX software on rack-optimized servers. But the new clinical data warehousing applications would require 16 additional VMware ESX servers, and the data center lacked sufficient I/O infrastructure and cabling. In addition, provisioning this quantity of physical servers would be difficult in the few weeks available.

"We needed a cost-effective computing system that would enable us to expand our use of EMRs quickly over the next year, minimize network infrastructure build-out, and reduce time to rack and configure servers," says Michael Heil, manager of technology infrastructure, Moses Cone Health System.

Solution

The Moses Cone Health System IT department considered two approaches. One was to continue using existing rack servers, adding Cisco® Nexus 5000 Switches to implement a unified fabric that supports Fibre Channel over Ethernet (FCoE). This approach would eliminate the need for separate server connections to the data and storage networks, significantly reducing the costs of cables and switch ports. However, the approach would not reduce data center space, power, and cooling needs for servers, nor would it reduce the time and cost of provisioning new servers.

Moses Cone Health System instead decided to implement the Cisco Unified Computing System (UCS), which combines compute, networking, storage access, and virtualization in a cohesive system. "With the Cisco UCS, we can install Microsoft Windows 2008 on one blade, and then quickly move it at any time to another blade in the same or different chassis, say, if a blade fails," says Heil.

Cisco Advanced Services provided planning and design services to identify and address business and technical considerations before implementation. Over the three weeks of implementation, the Advanced Services team provided knowledge transfer and gave the IT staff hands-on experience with Cisco UCS Manager.

The Cisco UCS integrates into the Health System's existing data center environment, including its Ethernet network, fibre channel environment, and EMC Clariion SAN array. Initially, the IT department configured the Cisco UCS with 2 chassis containing a total of 16 server blades. Later the team added another chassis containing 8 blades, bringing the total to 24. Each chassis attaches to a pair of Cisco 6100 Fabric Interconnects over four FCoE connections. The fabric interconnects, in turn, connect to the core network over 10 Gigabit Ethernet, and to the storage networks over 4-Gbps fibre channel by way of Cisco MDS 9100 Series Multilayer Switches.

> "We installed eight servers on Cisco UCS within 30 minutes of taking it out of the box."
>
> **—Michael Heil, Manager of Technology Infrastructure, Moses Cone Health System**

Results

Low-Cost Growth

The Moses Cone Health System IT team calculated that for 16 servers, the Cisco UCS platform costs approximately the same as a traditional server architecture. For 17 or more servers, the Cisco UCS will cost US$90,000 less. "All subsequent server blades connect to the LAN and SAN through the Cisco UCS 6100 Fabric Interconnects instead of requiring additional switch ports, LAN interface cards and cables, and SAN interface cards and cables," Heil says. Savings in copper and fiber cabling alone amounted to $17,000.

Moses Cone Health System plans to migrate most of its applications from standalone servers to VMware on the Cisco UCS by 2012.

Increased Flexibility

Although the Cisco UCS is optimized for virtualization, it can also support physical servers in the same chassis as VMware. Moses Cone Health System took advantage of this flexibility when it received the unexpected news that the database servers for a new document management application had to be installed on physical servers. By hosting Microsoft Windows Server on the Cisco UCS, the Health System can take advantage of hardware abstraction to provide mobility for the physical server. "This simplifies our business continuity and disaster recovery plans," says Heil.

As another example of the flexibility of the Cisco UCS, the IT team initially configured server blades with 96 GB of memory and then later realized that 48 GB would be sufficient. To remove memory, the usual process is to power down the server, remove the chips, and then reboot, a process that can take 15 minutes per blade, which is difficult to schedule in a 24-hour healthcare environment. The Cisco UCS shortened the process: a Health System engineer removed the memory from unused blades and then moved the service profiles to these blades. "Using service profiles in this way reduced downtime from 10 or 15 minutes to 4 minutes, and avoided the risk of a 1-hour outage if a memory chip was not seated correctly," says Heil. "Service profiles also gave us confidence that the application would operate correctly as soon as it was moved."

Rapid Deployment

When Moses Cone Health System received its third chassis, Heil timed the process. "It took less than 17 minutes for two of us to unbox, rack, power, and cable up the FCoE connections," he says. "Just four cables connect the chassis fabric extenders to the Cisco UCS 6120 Fabric Interconnect."

Implementing a new VMware ESX host on the Cisco UCS takes one hour, compared to up to two days in the previous environment. "We installed eight servers on Cisco UCS within 30 minutes of taking it out of the box," Heil says, estimating that his team saved 1 to 2 weeks for all 16 servers.

In the previous computing environment, deploying a new server required zoning host bus adapter (HBA) World Wide Port Names to the SAN fabric, which took 2 to 3 hours. Only one individual had this skill, so deployment could be delayed until he found the time. Using the Cisco UCS, the individual with the needed skills was able to create a shared pool of HBA World Wide Port Names. Assigning all 48 zones on the SAN fabric took just 1.5 hours, instead of 2 to 3 hours for each server. The IT department saved at least 96 hours, or more than two weeks for one full-time employee.

Simplified Monitoring

While testing the Cisco 6100 Fabric Interconnects, the IT staff disconnected cables and then used Cisco UCS Manager to measure how quickly the virtual machine moved to a different blade. “The Cisco UCS Manager reports events within a few seconds,” Heil says. “We can quickly see issues, and Cisco UCS Manager reflects changes far more quickly than most Java applications.”

Faster Recovery

If an HBA on Moses Cone Health System’s rack-optimized servers failed, replacing it took one full day for two people. Now if the equivalent card on a Cisco UCS blade fails, the IT department can simply move the service profile to a spare blade, eliminating the time previously spent re-zoning.

Simplified Disaster Recovery

Moses Cone Health System is building a secondary data center for disaster recovery. The IT department plans to boot servers from the SAN and replicate application data to the secondary site, which will have its own Cisco UCS. If a nonvirtualized server at the primary site fails, the IT department will use service profiles to configure a blade in the Cisco UCS at the secondary site.

Heil concludes, “Cisco UCS has given our organization more flexibility and greater agility, giving us a solid foundation to meet changing healthcare industry demands. It’s an exciting time to be in healthcare, and tools like the Cisco UCS are helping us move forward.”

PRODUCT LIST

Switches

- Cisco Catalyst® 6513 Switch

Data Center

- Cisco Unified Computing System
- Cisco MDS Multilayer Switches 9134, 9124, and 9020

For More Information

To find out more about the Cisco Unified Computing System, visit: http://www.cisco.com/go/ucs.

To find out more about Cisco Data Center 3.0 solutions, visit: http://www.cisco.com/go/datacenter.

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Radiology Services Provider Creates Highly Available Environment

NightHawk Radiology Services built data center using Unified Computing System and Nexus switch platform.

EXECUTIVE SUMMARY

NightHawk Radiology Services

- Healthcare
- Scottsdale, Arizona
- 500 Employees

CHALLENGE

- Ensure availability of critical healthcare service
- Minimize data center costs
- Avoid service disruption during transition

SOLUTION

- Deployed Cisco Unified Computing System, using services from WWT, a Cisco Gold Certified Partner, and Cisco Advanced Services
- Used Cisco Nexus 1000V software switch for switching within the VMware vSphere environment
- Implemented Cisco Nexus 5010 Switches with Fibre Channel over Ethernet (FCoE) support

RESULTS

- Reduced physical server count by more than 50 percent
- Lowered per-chassis cabling requirements by a factor of five
- Gained ability to provision physical servers in 15-20 minutes

Challenge

NightHawk Radiology Services, headquartered in Scottsdale, Arizona, is leading the transformation of the practice of radiology by providing high-quality, cost-effective services to radiology groups and hospitals throughout the United States. NightHawk provides a complete suite of solutions, including professional services, business services, and an advanced, proprietary clinical workflow technology, all designed to increase efficiencies and improve the quality of patient care and the lives of physicians who provide it. NightHawk's team of U.S. board-certified, state-licensed, and hospital-privileged physicians, located in the United States, Australia, and Switzerland, provides services 24 hours a day, seven days a week, for approximately 1600 sites, or 26 percent of all hospitals in the United States.

When NightHawk decided to relocate one of its main data centers to Scottsdale, Arizona, the IT department sought to create a highly available and scalable environment. "Systems availability is a paramount concern," says Ken Brande, vice president of IT for NightHawk Radiology Services. "In some businesses, the cost of a server outage is revenue loss. In our business, server outages, even brief ones, are unacceptable because the cost is not measured not in dollars, but rather in delayed delivery of patient care."

In designing the new center, NightHawk looked for technology with the highest level of redundancy and resiliency. If any single server failed, a local redundant server would take its place. For additional protection, the company would pair the new data center with an existing data center in Chicago in an active-active configuration. If either data center experienced a total failure, the other data center could take over its workload.

Solution

After evaluating computing platforms, NightHawk chose the Cisco Unified Computing System® (UCS), which combines compute, network, storage access, and virtualization in a cohesive system that can be managed as a unified entity. “One of the biggest attractions for us was FCoE [Fibre Channel over Ethernet] support, which halves the number of cables we’ll need to manage,” says Jordan Kojouharov, IT director, NightHawk Radiology Services.

NightHawk needed to implement the Cisco® UCS quickly and be prepared to manage it from day one. Therefore, the IT team engaged Cisco Advanced Services to deliver the Cisco UCS Starter Kit service, which includes installation and configuration of hardware and software, deployment of physical and virtual servers, and knowledge transfer. WWT, a Cisco Certified Gold Partner, helped implement the Cisco Nexus® Switches and NetApp storage, and worked alongside Cisco Advanced Services and the NightHawk IT team to prepare service profiles for NightHawk’s VMware vSphere environment.

The Cisco UCS consists of four chassis, currently housing 18 Cisco UCS B200 M1 Server Blades. A single pair of Cisco 6100 Fabric Interconnects provides Ethernet and storage area network (SAN) connectivity for all chassis and blades, eliminating the need for separate network interface cards, cables, and switch ports for application and storage traffic (see “Technical Implementation”).

NightHawk configured eight Cisco UCS blades as VMware ESX servers, each hosting approximately 10 virtual machines. The company expects to double the number of virtual machines per host to 20 after further testing. To apply consistent network and security services to all virtual machines as they move between blades, NightHawk uses the Cisco Nexus 1000V Switch, a software switch that operates inside the VMware ESX hypervisor to give the network team complete visibility into the virtual machine environment.

The Cisco UCS coexists with NightHawk’s existing servers, which connect to the Cisco Nexus 5010 Switches using FCoE. This arrangement has enabled the company to gradually move new application components onto the Cisco UCS, after thorough testing.

> “With Cisco UCS Manager service profiles, we can very quickly reconfigure any server blade so that it’s ready for production in 15-20 minutes. Rapid configuration is critical in our environment, where a server outage is simply unacceptable.”
>
> **—Ken Brande, Vice President, IT, NightHawk Radiology Services**

Results

Competitive Advantage Through High Availability

“The Cisco UCS delivers the high availability we need to attract and retain customers,” Brande says. If a server blade should fail, for example, the IT department can use Cisco UCS Manager to move the virtual machines on that blade to any other available blade, in the same or a different chassis.

The ease of moving virtual machines between servers on the Cisco UCS helps ensure that adequate compute capacity is available between midnight and 5:00 a.m., when the company receives three-quarters of its images. “If we want to apply an operating system upgrade to a server blade in the afternoon, we can quickly move the virtual machines to another blade, and then just as quickly move them back when the upgrade is complete,” says Brande. “We no longer have to postpone software updates out of concern that we will have reduced production capacity during our peak nighttime hours.”

Simplified Management

Using Cisco UCS Manager service profiles, an administrator can change an operating system configuration and then apply it to multiple server blades at the same time, saving time and reducing configuration errors. Cisco UCS Manager can also send alerts based on specified conditions. The service profiles and templates in Cisco UCS Manager will become increasingly useful as NightHawk adds server blades, according to Kojouharov. “VMware ESX servers are easier to deploy on Cisco UCS,” he says. “We simply insert the blade, attach a server profile, and the installation is complete.”

Firmware upgrades are easier as well, because the IT team simply attaches the upgrade to the template, and then Cisco UCS Manager automatically updates all server blades associated with that template. Cisco UCS Manager templates enable the IT team to update all servers in just 30 minutes, compared to 20 hours with the previous computing platform.

Lower Costs

The new data center costs less to maintain than NightHawk’s other data center, for the following reasons:

- **Fewer physical servers:** With Cisco UCS, all application components reside on a single Cisco UCS with 18 server blades. “When we fully migrate our data center to the Cisco UCS, the number of devices we need to power, cool, and manage will decrease dramatically,” Brande says.
- **Fewer cables and network interfaces:** Any other computing system would have required six to eight Gigabit Ethernet network connections to support virtualization. “With Cisco UCS, we need only two 10 Gigabit Ethernet interfaces, which significantly reduces cabling and port costs,” says Chris Smith, manager of datacenter operations, NightHawk Radiology.
- **Fibre Channel over Ethernet:** Network traffic and storage traffic travel from the Cisco UCS server blades to the Cisco UCS 6100 Fabric Interconnects over FCoE instead of separate Ethernet and Fibre Channel cables. Therefore, NightHawk decreased per-chassis cables by a factor of five, overall Ethernet switch ports by a factor of ten, and Fibre Channel switch ports by a factor of four. “The FCoE support in the Cisco UCS reduces Ethernet and Fibre Channel infrastructure costs, and also enables us to use more of our power and cooling budgets on servers,” says Smith.

Increased Business Agility

Cisco UCS Manager has decreased the time needed to deploy and manage servers by 80 percent, while also increasing stability and availability. “With Cisco UCS Manager service profiles, we can very quickly reconfigure any server blade so that it’s ready for production in 15 to 20 minutes,” says Brande. “Rapid configuration is critical in our environment, where a server outage is simply unacceptable.”

> “VMware ESX servers are easier to deploy on Cisco UCS. We simply insert the blade, attach a server profile, and the installation is complete.”
> **—Jordan Kojouharov, IT Director, NightHawk Radiology Services**

Next Steps

After NightHawk deploys a Cisco UCS in its Chicago data center, the IT department will implement the active-active design between Scottsdale and Chicago, for even greater resiliency. The IT department also plans to connect the Cisco UCS directly to the Fibre Channel storage network, eliminating the need for fibre-channel storage area network switches.

Kojouharov concludes, “With the Cisco UCS, we’re managing less equipment and fewer cables in our new data center, which minimizes the things that can go wrong. We expect the benefits to multiply as the business grows and we add new servers.”

> “The FCoE support in the Cisco UCS reduces Ethernet and Fibre Channel infrastructure costs, and also enables us to use more of our power and cooling budgets on servers.”
> **—Chris Smith, Manager of Datacenter Operations, NightHawk Radiology Services**

Technical Implementation

The Cisco 6100 Fabric Interconnects separate NightHawk’s application and storage traffic, directing application traffic through a pair of Cisco Nexus 5010 Switches to Cisco Catalyst® 4900 Switches in the network core, and storage traffic through a Cisco MDS 9124 Multilayer Fabric Switch to NetApp fibre-channel storage. More than a dozen additional data center servers connect to the Cisco Nexus 5010 Switches through Cisco Nexus 2000 Fabric Extenders, which are managed through the Cisco Nexus 5010.

PRODUCT LIST

Data Center

- Cisco Unified Computing System
- Cisco Catalyst 4900 Switches
- Cisco Nexus 5010 Switches
- Cisco Nexus 1000V Switches
- Cisco MDS 9124 Multilayer Fabric Switch

For More Information

To find out more about the Cisco Unified Computing System, visit: http://www.cisco.com/go/ucs.

To find out more about Cisco Data Center 3.0 solutions, visit: http://www.cisco.com/go/datacenter.

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IDC CUSTOMER SPOTLIGHT

Alphawest builds on Cisco UCS for its Cloud Computing Solution

June 2010

Sponsored by Intel and Cisco

Project Summary

Over the last few years, significant advances in Information Communication and Technology (ICT) have simultaneously occurred across the board which has enabled centrally distributed application architectures, or the re-centralization of ICT to prosper once again, similar to that of the IT/dumb terminal architectures in the 1980s. Today's technology can facilitate a robust, dynamically provisioned and highly secure end-user experience while delivering on the benefits of consolidation, centralization and convergence. This customer spotlight describes Alphawest's journey towards creating a shared infrastructure known in the industry as "Cloud Computing" or Infrastructure as a Service (IaaS) and becoming the first Australian company to be an authorized technology partner for Cisco's Unified Computing System (UCS), based on the Intel Xeon Processor 5500 Series.

Solution Snapshot

Organization: Alphawest Services Pty Ltd.

Operational Challenge: Building a world-class infrastructure for delivering a private virtual datacenter offering

Solution: Cisco Unified Computing System (UCS), powered by Intel Xeon Processor 5500 Series .

Project Duration: 18 months from inception.

Project Cost: Undisclosed

Benefit: Lowered cost of ownership, agility of service provisioning and elasticity of infrastructure.

Introduction

Alphawest is an ICT services provider with over 20 years in the Australian market addressing the needs of the government and commercial market. Alphawest, in conjunction with Optus, provides integrated information and communication technology solutions and is owned by SingTel Optus.

In September 2008, Alphawest embarked on architecting an IT infrastructure cloud solution as a strategic focus for its business. The management recognized that they could provide a compelling infrastructure cloud service that would meet the requirements of the commercial and government market coupled together with Optus' strengths in its telecommunications services network.

A Cloud solution will form an integral part of Alphawest's wide scope of new generation value added services that compliment an existing, broad portfolio of services in their datacenter technologies practice. The management team wanted to deliver a 'best in class' infrastructure cloud platform utilizing a best-of-breed approach from various technology suppliers. The man behind architecting the enterprise solution, Rodney Haywood, Principle Architect - Datacenter Technologies and Cloud, was in charge of the technology components underpinning an IaaS offering. "When you are building Infrastructure as a Service, what you need is flexibility because workloads in the Cloud may not be as

predictive as private enterprise workloads. Being able to make fast administrative changes and enabling self-service is a competitive advantage", Haywood stated.

Mid-way through the research phase of the project, Alphawest was introduced under non disclosure to what was back then, a preview of the Cisco Unified Computing System (UCS) from corporate Cisco headquarters. Alphawest has a long standing relationship with Cisco that dates back to 1994 with 12 partner accreditations, specializations and 138 certified engineers.

In the US in early 2009, Andrew Vranjes, Alphawest practice manager for Datacenter Technologies and the person in charge of the solution offering, was privy to the Cisco UCS solution. Andrew needed to enthuse on the implications meant for Alphawest with what he had just witnessed. He contacted Rodney and in his own words, "I think we have found our IaaS compute platform!".

What Alphawest saw at the heart of the Cisco UCS solution was a combined data centre resource to reduce total cost of ownership and radically reduce the number of devices requiring setup, management, power, cooling, and cabling. In an example of their subsequent comparisons, to current technology the cabling needed to support 3,500 virtual machine workloads were numbered in the hundreds of cables; with each cable requiring a port, and an administrator to configure each port. This did not include the need for coordination between server, storage and virtualization administrators to make the management changes. The Cisco UCS solution according to their tests, needed just 40 cables, and with minimal configuration from an administrator, instead an operator could provision those workloads.

Implementation

Cisco extended to Alphawest, access to all levels of Cisco executives ranging from technical expertise, technical marketing to senior executives during a time when the technology was fresh off the shelf. Alphawest declared in the interview with IDC that these discussions were "Invaluable and sharpened our thinking". This was seen as one of the critical success factors during the implementation phase, as knowledge sharing and transfer took place across all levels from the local Australian subsidiary to corporate headquarters. The shared vision, plans, and transparency into the Cisco organization meant that Alphawest were able to address non-technical implementation issues that so very often occur in developing a new service offering.

Another key component of the solution was the UCS manager software. It combines multiple management functions into a single interface. One of the key features that Alphawest liked was the provisioning of both, Graphic User Interface (GUI) and a command line interface. In their words, "neither is a poor child". Engineers were completely content with the command line interface while non-technical administrators/operators found comfort with the GUI interface. The UCS manager allows the managing of service profiles that encompasses the infrastructure policy needs to provision a server from a hardware perspective, such as server identity, firmware, network and storage policies. This profile can be moved between blades, changing the identity of the blade and complementing both physical and virtual environments.

The benefit of unifying infrastructure management through UCS software was the reduction in training and operational costs. A pleasant surprise to Alphawest was that it worked according to expectations, considering they were a little pensive about first generation versions of the software, somewhat expecting critical functionality to be in early release stages and susceptible to software bugs.

The manager software also provided visibility into SLAs and performs in a way that administrative and management costs are kept low. This had a double edge sword effect as parts of the management interface and the integration with older system management tools presented a challenge (see Challenges section).

"The Cisco UCS platform has allowed us to achieve our goal of stateless computing with less operational costs", according to Rodney Haywood. The fact they no longer needed to build silos of infrastructure at the physical layer meant that they could be much more agile in the provisioning of the service. They quote that a server, storage and network resources can often be self-serviced and provisioned in less than 4 minutes. Powering this platform is the Intel Xeon Processor 5500 Series, one of the core components of the cost-value proposition allowing the UCS solution to scale and embed virtualization technology. The improved performance and reduced power consumption ensures a lower TCO of the datacenter.

The implementation effort was complete in a matter of weeks. The UCS platform itself was switched on within a day, and in Alphawest's words, "it worked". Before production commences, testing, and proofing is underway to achieve 'ready for service'. "The real work is in the 'layer 8' 8'by architecting the people, and process management to support the virtual machine layer" said Andrew Vranjes.

Challenges

The challenges were twofold. Firstly, developing a new design on a new infrastructure fabric meant breaking new ground for Alphawest. They needed to understand how it works and adjust the design of use such as availability, virtual storage area network (VSAN) and backup. While they were used to the 'older' way of architecting an infrastructure fabric, there was no reference architecture for what they were attempting to achieve with the Cisco solution. The experience was like "creating a reference architecture as we went along", Alphawest stated.

The second challenge they faced was the integration with Alphawest's existing system management platform. No system stands alone as an island, let alone the UCS platform. Parts of the management functionality of the UCS platform didn't integrate well with their existing system management platform due to the limited exposure of management functionality upon integration. Like with all new technology, backward integration to an older system management tool was proving difficult. A solution involved the task of finding the best way around 'instrumentation' and how to match people and process to the integrated system.

Benefits

The benefits were threefold. Firstly differential cost of the physical assets combined into a converged platform yielded a 10-15% savings. Also, with the improved performance of the Xeon 5500 means that fewer servers are required to deliver a high level of performance when compared to previous generations of the Xeon CPU. Secondly, having a greater impact on cost was the differences in staffing requirements and operation expenses. Efficiencies around "rack and stack" of scalable and highly integrated equipment within the data centre, consolidated cabling [and networking] architectures, and a high VM density (or an efficient VM per kilowatt ratio), thanks in part to the energy efficiency of the Intel Xeon 5500 meant that in the long run, operational expenses are kept to lower than industry standards. "We [Alphawest] wanted to avoid islands of infrastructure as the enterprise will be able to see our problems when they needed to scale. What we had set out to build was an environment where we could abstract out what we need – or what we term as 'wire once'", according to Rodney Haywood vExpert, Enterprise Architect - Virtualization & Cloud.

Lastly, with this enabling infrastructure and support from Cisco and Intel, Alphawest became the first Australian company to be an authorized technology partner for Cisco's Unified Computing System. A compelling message to the government and commercial market in providing a virtual private cloud computing solution, bridging the gap between enterprises' own private infrastructure cloud and public

cloud options. This is Alphawest's core message and differentiation by using the Optus Evolve MPLS new generation IP network in a secure manner to achieve this.

Recently, Curtin University of Technology signed up as a 'pilot customer', making them one of the first Asia/Pacific customers to deploy the Cisco Unified Computing System with Alphawest. Testing, configuration and performance monitoring between adjacent workloads are in progress on Alphawest's private virtual datacenter cloud.

Methodology

The project and company information contained in this document was obtained from Alphawest, including information obtained from Cisco's and Intel's website. Questions were posed by IDC directly to Alphawest employees* and material from Alphawest corporate documents were used. The key employees of Alphawest interviewed were: Andrew Vranjes, Practice Manager, Datacenter Technologies and Rodney Haywood, vExpert, Enterprise Architect - Virtualization and Cloud.

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First Aussie win for Cisco's blades

Suzanne Tindal, ZDNet.com.au on December 11th, 2009

Cisco's unified computing concept has received its first public thumbs up as Dimension Data announced today it had signed a deal to roll-out Cisco's unified computing system for the Catholic Education Network.

> "The entry-level position was quite affordable."
>
> CENet solutions architect Glen Gibson

Dimension Data will be installing a single Cisco chassis with Cisco blades, NetApp expansion shelves and VMware's vSphere 4 to be the base for Cisco's unified computing system (UCS). Hardware and services will cost around $330,000.

The Catholic Education Network (CENet) provides datacentre services on a needs basis to 15 catholic dioceses. It had 40 stand-alone servers, of which 20 were ready to be refreshed. The network looked at virtualisation when it was doing that refresh and came across Cisco's unified computing.

CENet's Solutions architect Glen Gibson told *ZDNet.com.au* that CENet realised that the UCS was going to cost the same as other blade systems, but had tighter integration with VMware, enabled easy provisioning and was going to save costs on cabling. Considering the organisation already had a good relationship with Dimension Data and Cisco, he called it a "bit of a no-brainer".

Gibson said that there was a misconception about Cisco's UCS that it was only for large businesses. "The entry-level position was quite affordable," he said.

The system also allowed the network to grow as it wanted to, he said. Each diocese had their own IT team meaning that they only bought services from the network (which is owned by a consortium of the 15 dioceses) when they needed it.

Because of the Federal Government's Digital Education Revolution initiative, which aims to have each year nine to 12 student kitted out with a laptop, and the new plan to have Telstra connect catholic schools via cable, the network believed demand for its services would rise.

"I wouldn't be surprised if we went up to three, four, five chassis," Gibson said.

The network planned to use its infrastructure-as-a-service model to provide software-as-a-service to member dioceses and schools.

"The immediate benefit of the UCS solution for our dioceses is in being able to run their IT operations more effectively and cost-efficiently," CENet CEO Bede Ritchie said in a statement. "It will help them to more rapidly deploy cutting-edge learning environments, school administration systems, and applications to assist curriculum delivery in a digital age. And while Dimension Data's solution was no more expensive than other more traditional options, Cisco UCS also provides lower total cost of ownership benefits."

URL:*http://www.zdnet.com.au/first-aussie-win-for-cisco-s-blades-339300002.htm*

Solution Overview
New horizons: With its high-performance data center, ECKD can offer voice over IP and other collaborative products as a managed service in the future.

Background
ECKD GmbH has been providing customers from the church, welfare, and charity sectors with tailored IT services for 25 years.

Challenge
Increasing pressure to innovate and a dramatic growth in customer requirements prompted the need to build a new data center.

Solution
Cisco Data Center 3.0 Vision made the new, highly energy-efficient ECKD data center a reality. The key elements are the Cisco Unified Computing System and completely virtual Cisco Nexus switches. ECKD has also improved cooperation among its staff with the Cisco Unified Communications Manager. At the same time, this software serves as the basis for future business models; customers can use it as a tailored service from ECKD for multimedia voice, web, and video communication. Two ASA 5500 Cisco Adaptive Security Appliances guarantee the security of the universal Cisco platform.

Benefits
- High energy efficiency with maximum data center performance
- Efficient management and high flexibility
- Entirely virtual with optimal use of resources
- More and qualitatively improved IT service for customers
- Additional source of income through collaboration

IT Provider for Churches Builds New Green Data Center

ECKD Uses Data Center 3.0 Model and Nexus Switches to Create Highly Efficient Data Center

With support from T-Systems, EDV-Centrum für Kirche und Diakonie (ECKD) is building a next-generation data center. Following the same architecture as the Cisco® Data Center 3.0 Vision, the new center will use Cisco Nexus switches, a first for the church sector, and the innovative Unified Computing System (UCS). The result is a highly energy-efficient, secure, and scalable platform for any imaginable IT and communication service. The new ECKD data center is an impressive demonstration of how economic and ecological objectives can be brought together and harmonized.

ECKD, with its headquarters in Offenbach and branches in Berlin, Hamburg, Kassel, and Suhl, is one of the Germany's leading IT providers for the church. Its key partners are the Evangelical Church in Hessen and Nassau, the Evangelical Church of Kurhessen-Waldeck, the Evangelical Credit Cooperative eG, the North Elbian Evangelical Lutheran Church, and the Evangelical Church of Berlin-Brandenburg-Silesian Upper Lusatia. However, an increasing number of customers from the Catholic Church and public sector are turning to ECKD's individually tailored products. ECKD's managing director is Willi Hanselmann.

Getting Closer to the Customer with a Dedicated Data Center

"IT requirements in the church, charity, and welfare sectors have gone up dramatically in recent years," says Michael Otto, head of reporting, IT, and fundraising at ECKD. The digitalization of activities in church organizations is happening just as quickly as in public offices and the private sector. ECKD has supported this trend for years with a secure church connection, based on a Cisco network, as well as intranet and hosting solutions tailored to customers' needs. Until now, the organization's ISO-certified IT services were set up in cooperation with a communal data center.

"That's all changed now," Otto says. "We have built our own data center, so we can react more quickly, improve the quality of service, and expand our product range." Leaving out the external operator means shorter lines of communication between ECKD and its customers. This approach makes adapting the IT to changing customer processes a more flexible task, and the company can resolve problems more quickly. Because there will be no communication with an intermediary partner in the future, ECKD employees have significantly more time on their hands. For this reason alone, Otto is expecting a significant rise in production at the new data center.

The team of experts employed at the new data center, the IT Centre for the Protestant Church and Welfare Services (left to right):

Cécile Willems, Head of Sales Training, Research & Healthcare at Cisco Germany

Gottfried Ostendorf, IT Sales Manager with T-Systems' Church and Social Sales Team

Michael Otto, Head of Reporting, IT, and Fundraising at ECKD

Dorothe Brohl, Account Manager at Cisco Germany

Willi Hanselmann, ECKD Company Director

Wolfgang Stender, Head of Sales with T-Systems' Church and Social Sales Team

"We have built our own data center so we can react more quickly, improve the quality of service, and expand our product range."

Michael Otto, Head of Reporting, IT, and Fundraising at ECKD

ECKD IT.Menschlich

ECKD is one of the leading IT providers for the church, welfare, and charity sectors. Solution Overview

Green Architecture: Virtualization in Every Aspect

A new data center, something that sounds so modest and unoriginal, is actually an example of innovation envied by many of its peers in Germany. The architecture of the ECKD hi-tech center looks almost nothing like the classic structure of a conventional data center. Instead, it is based on the Cisco Data Center 3.0 model, which reverses the physical dependency between server hardware, data storage systems, and the network. "Thanks to the complete virtualization extending across all levels of infrastructure, inefficient and inflexible silo structures don't even have a chance to form," Otto says. "Virtualization allows us to remove ourselves from the logical viewpoint of physical levels." This means that different customer applications can be provided with computer performance and memory capacity in a flexible way and adapted to specific current needs. The more the data center becomes virtualized, the higher the utilization rates of the processor, storage, and network resources. Accordingly, the company has fewer inactive IT resources to maintain and keep cool, a process which uses a lot of power, consequently reducing investment and running costs in the long term.

According to Otto, the Cisco UCS and the Nexus 1000V virtual Cisco switches are among the new ECKD architecture's most innovative elements. "There are many IT virtualization strategies out there, but no one has managed to make virtualization as far-reaching as Cisco UCS and VMware vSphere 4 have," the managing director says. The UCS brings the management of virtualized server, storage, and network resources into one compact system, which on the outside, apart from its reduced size, looks just like an everyday eight-blade rack. "However, blade servers in the UCS are packed in very tightly," Otto goes on to explain. "We fitted twice as many high-power blades as before in the same rack space, and this considerably reduces the need for cooling. In older data centers, the energy consumption would have been four times as high at the same output rates."

It was just such an ecological consideration that made ECKD choose the Cisco Data Center 3.0. Going along with ECKD's approach of "Innovative IT" can make a significant contribution towards reducing harmful CO2 emissions.

Even Switches Are Becoming Virtual

Thousands of data centers around the world are currently implementing some form of virtualization. However, one virtualization is not necessarily the same as the next. The attempt to make better use of IT resources is spreading in an ever more complex way, and often, different solutions for different infrastructural divisions do not offer in-depth built-in management interfaces. This lack of interfaces often means the added flexibility that is sought remains an illusion, because the benefit of the higher usage rate is undone through increased administration costs.

Thanks to the Cisco integrated virtualization strategy, ECKD does not have this problem, as Otto explains by using the example of the virtual Cisco 1000V Nexus Switches: "This is a pure software implementation, which is embedded seamlessly into the VMware virtualization solution vSphere for ESX servers. We can now apply regulations-based network services to all virtual machines, just like we do on hardware switches. Along with their network connection, the virtual servers can be moved about almost anywhere on the physical server farm when switched on. They do not even have to stop to be serviced." A virtual Nexus switch is managed alongside other Cisco Nexus and Catalyst switches, which is a highly efficient way of working, and also offers very simple scalability options.

Platform for New Business Areas

Scalability plays a part in the new ECKD data center, not only because the organization needs to support a growing number of customers, but also because ECKD needs to expand its portfolio. This is why, for example, the Cisco Unified Communications Manager is already installed, primarily as an internal platform for voice over IP. "Apart from our classic products for the church's Reporting, Personnel, and Accounting departments, as well as the IT Services division, this means we can also offer voice over IP and other types of collaboration in the future, as a managed service," says Otto. Small communities, just like the top church institutions, can adopt innovative collaboration solutions as a tailored service via their secure ECKD church connection. They do not need any specific on-site

> "There are many IT \virtualization strategies out there, but no one has managed to make virtualization as far-reaching as Cisco UCS and VMware vSphere 4 have."
>
> Michael Otto, Head of Reporting, IT, and Fundraising at ECKD

Green and efficient: The new ECKD data center unites economic and ecological objectives.

> "ASA 5500 unites key security functions, such as firewalling, data encryption, and network authentication into one, extremely compact, efficiently administrated network system."
>
> Gottfried Ostendorf, IT Sales Manager with T-Systems' Church and Social Sales Team

Cisco Unified Computing System

infrastructure for it because the network brings the functions they need straight to them without any startup investment. In business terms, the majority of calculable variable outputs are replaced with predictable fixed costs. Furthermore, network-based collaboration also offers extensive ecological opportunities, because besides verbal signals, the IP-based ECKD platform also transmits all types of digitalized information, video images in particular. "This means Cisco Unified Communications enables the most varied types of integrated audio, web, and video conferences," says Dorothe Brohl, account manager at Cisco. "Church organizations can intensify their inter-location cooperation and in turn reduce their time on the road," says Brohl. This is a reason why collaboration is one of today's key answers to minimizing travel-based CO2 emissions in almost all areas of life.

Active Partnership

What makes an ECKD church connection so secure? How do sensitive data and confidential communication contents stay protected? "With the Cisco Adaptive Security Appliance ASA 5500," says Gottfried Ostendorf, IT sales manager with T-Systems' Church and Social Sales Team. "ASA 5500 unites key security functions, such as firewalling, data encryption, and network authentication into one highly compact, efficiently administrated network system. Integrating as many services as possible into one network also further reduces energy consumption and is another building block for ECKD's green IT ambition."

In its capacity as ECKD's general contractor, T-Systems shares in the planning, design, and implementation of the new data center. "It is not at all obvious that a provider like us would adopt highly innovative technology that has only just come on the market," says Otto. "We were well aware of the risks, and still we ventured on. However, that was only possible with a partner like T-Systems on our side, taking on the lion's share of responsibilities and, where necessary, hauling other technology partners on board." It is only future-ready users like this, those who do not wait for innovative technologies to prove themselves against others, which give these technologies a chance to swiftly take over the market, to the benefit of the customer and the environment.

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Value-Added Reseller Differentiates Service with Cloud Tool

LaSalle Solutions moved its mission-critical asset management service to Unified Computing System C-Series Servers.

EXECUTIVE SUMMARY

LASALLE SOLUTIONS

- Lifecycle Asset Management
- Rosemont, Illinois
- 80 Employees

BUSINESS CHALLENGE

- Create excellent customer experience for cloud service
- Increase business agility
- Support business growth

NETWORK SOLUTION

- Cisco Unified Computing System C-Series Rack-Mount Servers, used to host customer-facing LAMP tool and critical business applications

BUSINESS RESULTS

- Built foundation for 100 percent virtualized application environment
- Postponed capital outlay for new storage array
- Provisioned hardware for new customer environment in one day

Business Challenge

LaSalle Solutions, a wholly owned subsidiary of MB Financial located near Chicago, Illinois, is a Cisco value-added reseller and also provides lifecycle management services for technology assets such as switches and routers. To differentiate itself, LaSalle offers a unique cloud-based service, called LAMP, which streamlines asset lifecycle management, including hardware acquisition, equipment leasing, contract maintenance and management, and disposition.

LAMP customers regard the service as mission-critical. Some of these customers have thousands or tens of thousands of network devices around the world, and knowing their current location, configuration, and financing status is essential to keeping the business running and costs down.

As LaSalle prepared to release a new version of LAMP, the company decided to upgrade the hosting platform to prepare for future growth. “When you extend an application to your customers, it has to be available 24 x 7 and deliver consistently high performance,” says Steven Robb, vice president and general manager for LaSalle Solutions. “Flexibility and stability were our most important platform criteria. We also wanted to work with a company that had a clear vision for cloud computing.”

Solution

After evaluating several leading computing platforms, LaSalle selected the Cisco Unified Computing System™ (UCS) C-Series Rack-Mount Server. “Our evaluation process focused less on technical specifications and more on the vendor’s architectural strategy and vision,” Robb says. “The Cisco UCS C-Series roadmap is moving in the same direction as LaSalle, toward virtualization and cloud computing.”

LaSalle initially implemented four servers, two Cisco® UCS C200 M1s and two Cisco UCS C210 M1s. Currently the servers connect to the Ethernet network through Cisco Catalyst® 2950 Switches. When LaSalle adds an EMC storage array, LaSalle will replace the existing switch with a Cisco Nexus® 5000 Switch with Fibre Channel over Ethernet (FCoE) support, reducing cabling and switch port requirements.

The servers operate VMware ESX, and the 4TB of on-board storage is ample for 15 virtual machines. When LaSalle adds a new storage array, the company will take advantage of Cisco Extended Memory Technology to increase server density. LaSalle has already migrated 80 percent of its applications to the Cisco UCS C-Series servers, and is well on the way to its goal of 100 percent.

Results

Solid Platform for Mission-Critical Cloud Service

Each of LaSalle's LAMP customers, which include members of the Fortune 50, benefit from the high availability and performance of the Cisco UCS C-Series Servers. "LAMP is extremely important to our business, enabling us to keep track of thousands of network devices from one interface," says Robert MacDonald, network engineer for Haworth, Inc., a leading designer and manufacturer of office furniture that operates in 120 countries and had net sales of US$1.65 billion in 2008. "The fact that I've never had to inquire about availability demonstrates that their server platform is robust."

The stability of the platform also enabled LaSalle to confidently introduce a new service, LAMP Mobile, which extends the tool to customers using smartphones and mobile devices such as the Cisco Cius and Apple iPad.

Business Flexibility

Cisco UCS and VMware give LaSalle the agility to quickly introduce new services that differentiate the customer experience or generate revenue. For example, when one of LaSalle's largest customers asked to rebrand the LAMP service to offer to its own clients, LaSalle was able to quickly meet the request. LaSalle created a separate virtual environment for the customer, and then replicated the application into that environment so that it could be customized, tested, and separately backed up. "With the Cisco UCS, we provisioned the hardware in one day, and our developers had a fully functional site in 30 days," says Eddie Garcia, director of engineering and collaboration for LaSalle Systems. "Using any other server platform, the same result would have taken months, and we might not have been able to agree to the customer request because of the resource requirements." Garcia adds that LaSalle had the confidence to create a new virtual environment on the Cisco UCS because server performance to date has been rock-solid.

> "Flexible storage options, including SAS and SATA drives and solid state storage, will let us use the Cisco UCS C-Series for every type of server role, including clustered VMware ESX hosts, standalone hosts for testing, enterprise database engines, and departmental network-attached storage."
>
> **—Steven Robb, Vice President and General Manager, LaSalle Solutions**

IT Flexibility

The Cisco UCS C-Series has given LaSalle a clear migration path from older 32-bit servers to a new virtual environment. Virtualization is an important part of LaSalle's business plan because it minimizes the cost of growth. From 2007 to 2010, the rate of growth for the LAMP service increased from about one new customer a month to 10 to 15 customers a month.

Built-in support for VMware will reduce the number of new servers LaSalle needs to accommodate more customers and applications, as well as the associated data center space, power, and cooling. And as LaSalle adds more Cisco UCS servers, management overhead will not increase, because the administrator can use Cisco UCS Manager to manage all servers from a single interface.

The Cisco UCS even enabled LaSalle to defer a large capital expense. The company knew that it would need to upgrade storage capacity in a year or two, and planned to implement an EMC storage array. “With the Cisco UCS C-Series servers and fiber channel connectivity, we were able to start with 4TB of internal storage, knowing we could migrate to shared storage when we had a better idea of how much capacity we’d need,” says Robb. “Flexible storage options, including SAS and SATA drives and solid state storage, will let us use the Cisco UCS C-Series for every type of server role, including clustered VMware ESX hosts, standalone hosts for testing, enterprise database engines, and departmental network-attached storage.”

When LaSalle does transition to shared storage, the company plans to use the internal storage for backup copies of virtual machines and local swapping.

PRODUCT LIST

Data Center

- Cisco Unified Computing System C200 M1 Rack-Mount Server
- Cisco Unified Computing System C210 M1 Rack-Mount Server

To learn more about Cisco Unified Computing System, go to www.cisco.com/go/ucs.

To find out more about Cisco Data Center Business Advantages, go to www.cisco.com/go/dc.

Next Steps

LaSalle expects to take full advantage of the Cisco UCS C-Series architecture and VMware to realize even more benefits of virtualization. For example, after adopting EMC storage, LaSalle plans to use VMware vMotion to move virtual machines between servers, enabling the LAMP cloud service to continue operating even if one of the servers needs an upgrade. “The Cisco Nexus 1000V Switch will enable each virtual machine’s security and networking policies to travel with it as it moves between servers,” says Garcia.

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Technology Distributor Deploys New Data Center

Westcon Group's next-generation data center delivers significant cost and application performance benefits.

EXECUTIVE SUMMARY

WESTCON GROUP, INC.

- Industry: Technology Distributor
- Location: Tarrytown, New York, United States

CHALLENGE

- Limited scalability of storage and server infrastructure
- Aging infrastructure in need of refresh
- Need to reduce total cost of ownership
- Need to scale infrastructure to support new initiatives

SOLUTION

- Cisco Unified Computing System as basis for data center consolidation and migration
- Cisco Services Accelerated Deployment

RESULTS

- Supported virtualized applications across entire business
- Increased business agility by simplifying management and provisioning
- Delivered significant reductions in total cost of ownership

Challenge

Westcon Group is a multinational distributor of networking and communications products, with operations in North and South America, Europe, the Middle East, Africa, Asia, and Australia. The company's customers include value-added resellers, systems integrators, and service providers who resell solutions to small and medium-sized businesses, enterprises, and governments around the world. In addition to providing a complete range of product distribution services, Westcon offers technical and managed services capabilities, engineering support, and global project management and fulfillment capabilities.

When the company performed an analysis of its networking and data center infrastructure in 2008, it recognized several opportunities for achieving significant cost and network performance improvements. Westcon had already begun virtualizing a portion of its application server environment but needed additional infrastructure to support its virtualization goals. Much of the existing server and storage infrastructure was due for refreshing. In addition, expansion was required to support growing power and storage capacity requirements. Duplicate server and storage infrastructures were also needed because Westcon had two production data centers: one in the United Kingdom and one in New York.

While Westcon was considering an overhaul of both data centers, Cisco launched its Unified Computing System data center platform. As a major distributor of Cisco solutions, Westcon quickly became familiar with the platform, which caused it to re-consider its data center refresh plans.

"We had already been using virtualized applications when the Cisco Unified Computing System was introduced," says William Hurley, CIO and CTO of Westcon Group, Inc. "We tested it, and it performed very, very well. Using this solution, we would be able to run our entire enterprise on less space and at a third of the cost with full redundancy. The conversation quickly turned from 'whether we do it' to 'when do we do it?'"

Solution

Westcon's new plan was to consolidate both data centers to a single location. The new data center platform was based on the Cisco® Unified Computing System, VMware virtualization solutions, and EMC storage solutions. To assist with initial installation and configuration, Westcon chose Cisco Services.

"Because we were early adopters of the Unified Computing System, Cisco Services provided the expertise to help us quickly achieve our objectives while mitigating the risk of a brand-new infrastructure," says Yoab Gorfu, chief architect of Westcon Group. "The experience we gained during this implementation will certainly be of benefit to our customers."

Westcon worked with Cisco Services' Accelerated Deployment, a four-week fixed-scope, fixed-price engagement designed to implement the Unified Computing System in a production-ready environment while transferring knowledge to the Westcon's IT team. After an initial discovery process to survey facilities and confirm project goals, the teams went to work.

By the end of the second day, the network and data center hardware had been installed and configured, and connectivity had been established for the data and storage area networks (SAN). The teams used the Unified Computing System Manager to set up the servers, communication ports, SAN pools, policies, templates, role-based access control, and service profiles.

By the end of the first week, Westcon's core infrastructure was operating, and soon the teams had installed and configured the VMware vSphere environment. Test applications were quickly running in a virtualized environment on the Unified Computing System. In the remaining days, monitoring, management, and failover testing was concluded and presentations were conducted to transfer knowledge about the implementation and related technologies.

"The Cisco solutions architects were extremely helpful in the knowledge transfer to our teams," said Gorfu. "In addition to the Unified Computing System expertise, we were very satisfied with their VMware and networking expertise. This added value ultimately helped us stay on the right path towards achieving our goals."

> "By centralizing our data center capabilities, we are able to realize both the scale and agility our IT infrastructure will require to aggressively grow our business in the coming years. Not only do we offer Cisco Unified Computing System to resellers, we are also an early adopter in implementing the solution within our own networking environment. We believe this lends an enormous degree of credibility as we offer cloud-based, virtualized data center solutions to the channel."
>
> **– Dean Douglas, president and chief executive officer of Westcon Group**

Results

The new infrastructure has greatly simplified data center operations for Westcon. The Cisco Unified Computing System consolidates the storage and the data I/O into one fabric. The boot-from-SAN stateless architecture and the Unified Computing System Manager makes server provisioning and maintenance easy, giving Westcon more business agility. It is easy to add blades, add memory to existing blades, and add virtual machines. Unified Computing System templates, policies, and service profiles allow compute capacity to grow or shrink as demand dictates; a single management domain can scale up to 320 servers.

The new environment also simplified Westcon's virtualization program. Previously, Westcon relied on over 175 physical servers across multiple geographies. Today, just 24 Unified Computing System blades support the centralized data center environment and operate virtualized applications across the entire business. Application performance is also expected to improve. When the data center consolidation is complete, Westcon Group expects to be able to process customer transactions up to twice as fast, as well as generate reports more efficiently from its single, global enterprise resource planning (ERP) system.

Simplifying the data center architecture also delivered cost savings. The Unified Computing System requires less power than the previous infrastructure and has a highly efficient internal cooling capability. Having fewer switches and servers reduces capital and operating expense. Westcon has also been able to significantly reduce its overall power consumption with a smaller physical server footprint and aggressive system virtualization.

From a business perspective, the most important benefit of the new data center architecture is the knowledge gained from its deployment. The Westcon team's familiarity with Unified Computing Systems will be valuable to the company's customers as they begin to consider and deploy similar data center solutions.

PRODUCT LIST

Routing and Switching
- Cisco Unified Computing System
- Cisco MDS 9100 Series Multilayer Fabric Switches
- Cisco Catalyst 4900 Series Switches

Network Management
- Cisco UCS Manager

Services
- Accelerated Deployment Service

"By centralizing our data center capabilities, we are able to realize both the scale and agility our IT infrastructure will require to aggressively grow our business in the coming years," says Dean Douglas, president and CEO of Westcon Group. "Not do we offer the Cisco Unified Computing System to resellers, we are also an early adopter in implementing the solution within our own networking environment. We believe this lends an enormous degree of credibility as we offer cloud-based and virtualized data center solutions to the channel."

Next Steps

The data center consolidation and migration are expected to be complete by mid-year 2010, providing a foundation for several new initiatives. Westcon intends to replace its global ERP and e-commerce systems, and the new Unified Computing System environment will deliver the flexibility and scale needed with minimal impact to the server infrastructure.

For More Information

To find out more about Cisco Services, visit: www.cisco.com/go/services

To find out more about Cisco Unified Computing System, visit: www.cisco.com/go/unifiedcomputing

To learn more about Westcon Group, Inc. visit: www.westcongroup.com

This customer story is based on information provided by Westcon Group, Inc. and describes how that particular organization benefits from the deployment of Cisco products. Many factors may have contributed to the results and benefits described; Cisco does not guarantee comparable results elsewhere.

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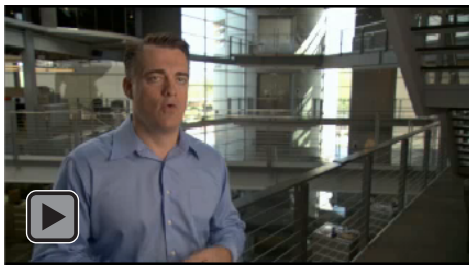
Service Provider Transforms Evidence Management in Law Enforcement

TASER Virtual Systems provides online access to petabytes of evidence using Unified Computing System.



Note: Adobe Acrobat Reader 9 is required to view this video.

Executive Summary

TASER Virtual Systems, a division of TASER International, Inc.
Law Enforcement Support
Santa Barbara, California
350 employees at TASER International

Challenge

- Introduce innovative service to transform policing and digital multimedia evidence management
- Scale to manage exabytes of evidentiary data
- Protect sensitive law enforcement information from unauthorized disclosure and protect integrity of evidence

Solution

- Deployed Cisco Unified Computing System in redundant data centers
- Provided lossless 10 Gigabit Ethernet connectivity from the core to the server
- Engaged Cisco Advanced Services for planning, deployment, and knowledge transfer

Results

- Helped law enforcement agencies increase operational excellence and administrative efficiency
- Saved US$900,000 in up-front capital costs and $37,000 in annual energy costs
- Planned and deployed complete infrastructure in 98 days

Challenge

A division of TASER International, TASER Virtual Systems was founded in 2009 to apply technology to increasing officer safety, improving policing resource allocation, and enhancing the interaction between law enforcement agencies and the public. The company delivers an innovative cloud service, EVIDENCE.COM, that global law enforcement agencies use to store, retrieve, and analyze video of police officers' encounters as well as data from the electronic control devices (ECDs). "The context leading up to the use of force is often lost," says Jas Dhillon, chief strategy officer and general manager, TASER Virtual Systems. "Video enables law enforcement agencies to back up their version of events."

Many law enforcement agencies worldwide already capture video, but they must expend increasing resources managing ever-growing physical tape, DVD, or magnetic media libraries and complying with retention policies. TASER Virtual Systems envisioned a brand-new type of service, a virtual data warehouse on a massive scale. The goal: Enable law enforcement agencies worldwide to store their video and ECD data according to their own retention policies, access it securely over the Internet on demand, and use powerful mapping and analytics software to mash up video with location information and more. "Our vision is to empower law enforcement to manage the deluge of information from on-officer cameras, in-car cameras, and fixed surveillance cameras," Dhillon says.

The vision, which would have been economically impossible until very recently, requires a massively scalable platform that remains easy to manage as it expands. The company conservatively projects that it will attract tens of thousands of global law enforcement agencies, which will collectively generate millions of video streams annually. "We needed a platform with the capacity to initially manage 10 petabytes [10,000 terabytes] of video and ECD data, increasing to 200 petabytes within the first three years of operation," says Vince Stephens, vice president of network operations, TASER Virtual Systems. To deliver a service on this scale with the reliability and performance that law enforcement customers demand, the company needed an advanced platform with:

- Scalable processing
- Scalable storage access
- End-to-end encryption
- Fault tolerance
- Reliable user access

> "Cisco's comprehensive services reduced the risk of introducing a transformational service using a brand-new, best-in-class technology."
>
> —Rick Smith, Chief Executive Officer, TASER International

Solution

After considering multiple platforms, TASER Virtual Systems selected the Cisco® Unified Computing System (UCS), which unifies network, compute, storage access, and virtualization into a single, cohesive system. "Cisco met our needs for financial stability, innovation, and ability to support our business for the long term," says Dhillon. "The economics of the Cisco UCS and Cisco Nexus switch platform are superior and will become even more so as our service grows. And Cisco is a trusted name to potential customers."

When Stephens was hired, he had only 98 days to launch the EVIDENCE.COM service. "I couldn't take risks," he says. The company engaged Cisco Advanced Services to help ensure that the Cisco UCS deployment proceeded smoothly and on schedule. The Cisco team provided design, planning, and deployment services, including:

- Installing VMware ESX on the server blades
- Configuring the system for fault tolerance
- Documenting operational procedures to give TASER's IT department the knowledge to effectively operate the EVIDENCE.COM environment
- Advising on how to organize the IT department to account for the fact that the Cisco UCS integrates compute, network, storage access, and virtualization in a single system

"Working with Cisco Advanced Services gave us the confidence that we could implement a new technology and introduce the EVIDENCE.COM service on time," says Stephens.

Cisco Advanced Services deployed identically configured Cisco UCS in two geographically dispersed data centers. Either can take over for the other in the event of a failure, helping to ensure uninterrupted service. Each Cisco UCS server connects over 10 Gigabit Ethernet to redundant Cisco Nexus 7000 Switches, providing the bandwidth needed to quickly move large volumes of video to and from customers (see Technical Implementation). To help ensure that evidence cannot be altered, or accessed by unauthorized people, the company developed a robust defense-in-depth strategy with eight levels, using solutions such as Cisco firewalls, Cisco Intrusion Prevention System, and Cisco physical security solutions to monitor the facility.

> "Working with Cisco Advanced Services gave us the confidence that we could implement a new technology and introduce the EVIDENCE.COM service on time."
>
> —Vince Stephens, Vice President of Network Operations, TASER Virtual Systems

Results

No other company offers a comparable multimedia storage, retrieval, and analysis system, for any industry, according to Rick Smith, chief executive officer for TASER International. "Cisco's comprehensive services reduced the risk of introducing a transformational service using a brand-new, best-in-class technology," Smith says.

Business Process Transformation for Law Enforcement

Launched in July 2009, the EVIDENCE.COM service is helping law enforcement agencies meet their goals for operational excellence and administrative efficiency. "EVIDENCE.COM has the potential to transform law enforcement by enabling agencies to focus on better policing resource allocation, safer communities, and improved overall safety," says Dhillon. When a law enforcement agency subscribes to the EVIDENCE.COM service, officers capture video of encounters with a small head-mounted video camera. At the end of their shift, officers dock the unit to upload the encrypted video over a secure link. Video and ECD data are stored according to each agency's retention policies, usually from three months to 20 years, and authorized users need only a broadband connection to retrieve their video on demand. Shift commanders can view all incidents by type, superimposed on a map. Then they can just click the incident marker to view the video. "The goal is to make more informed decisions to improve policing and officer safety, and gain earlier awareness of emerging hot spots," says Dhillon.

Cost Avoidance

Integrated 10 Gigabit Ethernet switching in the Cisco UCS eliminated the need for separate switches, saving US$200,000. "Together, the Cisco UCS, Cisco Nexus, and Cisco security technology cost 35 percent less than the next closest option, saving $900,000 in upfront capital costs," says Stephens. Cost savings will increase over the lifetime of the Cisco UCS because the company can purchase industry-standard RAM.

The system saves energy, as well. Each Cisco UCS chassis requires only one 30-amp circuit, not two like the other systems under consideration. "We are saving $770 monthly on energy costs for each chassis, for $37,000 in annual energy savings," says Stephens. "Reducing energy consumption also supports TASER's commitment to environmentally sustainable business practices."

Support for Massive Business Growth and Innovation

TASER configured the Cisco UCS to meet expected volume for the first year, or 10 petabytes of storage. The company can add capacity whenever needed by simply adding more chassis and server blades. "Scaling would be far more complex in a multivendor environment," Stephens says. "With its scalable processing, huge memory capacity, and tight integration with VMware, the Cisco UCS can meet our needs for the foreseeable future."

High Performance

The Cisco UCS and Cisco Nexus platform provide 10 Gigabit Ethernet access from the server to the core network, enabling users to retrieve video very quickly. What's more, the 384 GB of on-board memory in the Cisco UCS eliminates slowdowns during database access, usually the slowest aspect of cloud services. "We can address memory in nanoseconds instead of the milliseconds we would need with any other server, providing the responsiveness that users expect in the Web 2.0 era," says Stephens.

Simplified Management

The IT department can manage all chassis and integrated switching equipment from a single interface on the Cisco UCS Manager. Cable management is easier, as well, because the Cisco UCS connects to the network over two 10 Gigabit Ethernet links instead of 16 Gigabit Ethernet links.

Enhanced Disaster Recovery

Built-in support for virtualization in the Cisco UCS simplifies disaster recovery. In the event of a failure in one data center, TASER Virtual Systems can systematically begin using virtual machines in another data center.

> "The economics of the Cisco UCS and Cisco Nexus switch platform are superior and will become even more so as our service grows. And Cisco is a trusted name to potential customers."
>
> —Jas Dhillon, Chief Strategy Officer of TASER International and General Manager of TASER Virtual Systems

Next Steps

As the EVIDENCE.COM subscriber base grows, TASER Virtual Systems can meet the demand by simply adding new chassis and blades. Growth will not add to the IT department's workload because all chassis and blades are managed as one.

The company is also inviting third-party application developers to use the EVIDENCE.COM service as a platform for value-added services such as real-time tracking, global positioning system (GPS) marking, and analytics. "Our goal is to enable law enforcement agencies to mash up additional sources of information and use mapping and analytical tools to make better decisions on resource allocation and improve overall policing," says Dhillon. "Other types of organizations in other industries that need to keep evidentiary records are starting to take notice."

Smith concludes, "The next step is to unlock the collective evidence of all of our subscribers by making it actionable, searchable, and integrating it into a social network. We have the technology platform in the Cisco UCS and Cisco Nexus switch."

Technical Implementation

Cisco Advanced Services configured the Cisco UCS with two chassis containing 16 blades. The Cisco UCS connects to dual Cisco Nexus 7000 Switches that provide a redundant 10 Gigabit Ethernet core switching fabric. The Cisco Nexus 7000 Switch connects to the storage area network (SAN) by way of a Cisco MDS 9124 Multilayer Switch, and to Gigabit Ethernet servers by way of Cisco Catalyst® 4900 Series Switches. Later, TASER Virtual Systems plans to take advantage of Fibre Channel over Ethernet (FCoE) support in the Cisco UCS to unify its data and SAN fabrics, further reducing costs.

Product List

Services

- Cisco Pre-Production Pilot
- Cisco Unified Computing Support Service
- Cisco SMARTnet® Service

Data Center

- Cisco Unified Computing System
- Cisco Nexus 7000 Series Switch (network core)
- Cisco Catalyst 4900 Series Switch
- Cisco MDS 9124 Multilayer Switch

Security

- Cisco Intrusion Prevention System
- Cisco Adaptive Security Appliance 5540

For More Information

To find out more about Cisco Unified Computing System, visit: www.cisco.com/go/ucs

To find out more about Cisco Nexus family, visit: www.cisco.com/go/nexus

To find out more about Cisco Advanced Services, visit: www.cisco.com/go/services

Americas Headquarters
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Europe Headquarters
Cisco Systems International BV
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Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at **www.cisco.com/go/offices.**

Creating Cloud-Ready Data Center

Parentix changes traditional applications hosting model to software as a service using Cisco Unified Computing System.

EXECUTIVE SUMMARY

Customer Name: Parentix

Industry: Service provider

Location: Netherlands

Challenge

- Accelerate growth and win new business
- Reduce power consumption in data center
- Optimize customer experience

Solution

- Cisco Data Center 3.0 vision, architecture, and technologies
- Cisco Unified Computing System

Results

- More flexible platform enabled faster expansion
- Using less energy reduced operating costs
- Automation enhanced customer experience

Challenge

Parentix hosts business-critical applications for small and midsize companies, specializing in Windows solutions from Microsoft and Exact Software. Established in 2000, Parentix has grown quickly, increasing revenues by as much as 50 percent in recent years.

The company's top priority is to continue and accelerate its rapid growth, while finding ways of optimizing the customer experience and reducing costs. One of the main barriers to achieving this was the traditional structure of the company's two data centers in Amsterdam, which had separate servers and other components dedicated to different services or customers.

"Without a standardized and unified environment, it was hard for us to grow quickly enough," says chief executive officer Pieter Gabes. "We wanted to be more flexible in how we offer services to customers, by making our products cloud-ready. The idea was to become more efficient by serving more clients on the same platform and doing more business with the same number of people."

Because Parentix rents its data center space, the amount of power that it uses is limited by contract. The company had nearly reached that limit in both data centers and wanted to avoid opening a third facility. This meant doing more with the same level of power consumption, by virtualizing the data center assets. However, two performance issues had made full virtualization impossible.

First, some applications such as Exact Globe, an enterprise resource planning (ERP) solution for small businesses, needed higher I/O performance than was currently available on virtualized platforms. Second, it was important to have 10 Gb connectivity throughout the whole virtualized platform to support transaction processing on financial and ERP applications, which tend to need periodic intense bursts of very high bandwidth.

Solution

Parentix decided to introduce a new architecture based on the Cisco Unified Computing System™ (UCS), a next-generation data center platform specifically designed to accelerate the virtualization process. Cisco® 6100 Series Fabric Interconnects provide network connectivity and management capabilities for all the attached blades and chassis.

UCS is an integral part of the Cisco Data Center 3.0 portfolio, which is based on an architectural approach to evolving the data center through three phases of consolidation, virtualization, and automation. When Parentix was looking for a more structured approach to managing growth, the company was impressed both by the architectural vision of Cisco Data Center 3.0 and the technology solutions available.

> **"At the time UCS was the only platform to use the new Intel [Xeon 5600] processors. This gave us the confidence to run systems on UCS that we previously hadn't wanted to run on a virtualized platform."**
>
> **–Vincent Kemp, Technical Director, Parentix**

In fact, Parentix decided to purchase UCS based on the solution's performance metrics alone, a bold move that is typical of the company's innovative approach. "We were the first company in the Netherlands to move to the Cisco UCS platform, and we made that decision even before it became available for testing," says technical director Vincent Kemp. "That was a clear sign of our trust in Cisco, and we were not disappointed."

Six UCS B200 M2 Blade Servers not only offered ultra-high performance and flexibility, but also improved energy efficiency in the data center. The blade servers use Intel's new Xeon 5600 Series processors, which adapt their performance to the changing demands of applications in order to minimize power consumption. Because they utilize less electricity, the processors also produce less heat and require less cooling, further reducing energy needs and costs.

The speed of the Intel processors meant that applications like Exact Globe, which run on SQL servers and require fast I/O throughput, could operate in a virtualized environment for the first time. "At the time UCS was the only platform to use the new Intel processors," says Kemp. "This gave us the confidence to run systems on UCS that we previously hadn't wanted to run on a virtualized platform."

Parentix is using UCS as a virtualized platform for database servers, mail servers, and the terminal servers needed for Remote Desktop Services on Windows applications. Being able to consolidate disparate systems in this way creates a more standardized environment that is easier to work with. For example, increasing capacity on a particular service used to involve a series of different requirements to expand each element of the service, but can now be done much more efficiently using predefined templates.

"UCS was the first solution that made it possible for us to virtualize the whole data center and bring all our applications to the cloud," says marketing manager Babs Sturkenboom.

Other elements of the data center solution include VMware vSphere virtualization software and NetApp storage systems. Two Cisco Nexus® 5000 Series Switches enabled Parentix to:

- Consolidate the different network, server, and storage environments in its data centers
- Create a unified fabric over 10 Gb Ethernet, so that all types of traffic run on a single network.

The aim is to simplify the data center infrastructure to such an extent that it becomes easier and more cost effective to manage.

> **"We used to charge a set-up fee, but now we can offer customers an all-inclusive price per month, per user. This makes our offer more attractive, because it keeps costs low for our customers."**
>
> **–Babs Sturkenboom, Marketing Manager, Parentix**

A Cisco partner designed and implemented the new platform, with Cisco providing assistance throughout the project. "We had good support from Cisco, particularly when some of the hardware was delayed and we were at risk of missing our deadline," says Kemp. "They made a big effort to speed up delivery, and we got everything on time."

Results

Adopting a single data center architecture has enabled Parentix to change its business model from traditional, hosted services to a cloud-based approach, offering software as a service (SaaS). The company has created a new portal where customers can order and manage their services online, starting with the Exact Software applications that are widely used by small businesses in the Netherlands. Customers can set up services automatically and use them at once, without any intervention from Parentix staff, making the whole service delivery process much more flexible and responsive.

The business is changing to accommodate the new service model. "We used to charge a set-up fee, but now we can offer customers an all-inclusive price per month, per user," says Sturkenboom. "This makes our offer more attractive, because it keeps costs low for our customers." Parentix is also finding new routes to market, in preparation for future growth, beginning with a small number of reseller partners that customers can locate and select on the portal.

An important feature of the new data center is its extreme scalability, which will enable Parentix both to respond to customers' real-time requirements, and to cope with rapid growth in the number of services and users. Thanks to UCS, it will be possible to manage peaks in data center activity effectively and to provision new services, or upgrade existing ones, almost instantaneously.

"Previously it would take about a day to expand the capacity of a database server, including two or three hours of downtime for the customer," says Kemp. "Now we just assign additional resources to the software in a matter of minutes, and often the customer experiences no downtime at all."

Another highly visible benefit to customers is the faster performance of their applications, due to increased speed and capacity in the data center. Customers are also more satisfied with overall service quality, because they are experiencing higher availability. This is essential for customers' business operations and makes it easier for Parentix to fulfil its service-level agreements.

Five months after implementing the Cisco solutions, Parentix had reduced its power consumption enough to reverse the upward trend and stabilize usage below the maximum level. "Our energy consumption is now stable, which is an important achievement, and we're hoping to reduce it even further as we continue to take the traditional equipment out of the data center," says Kemp. The company is also hoping for additional cuts in operating costs over time, due to a combination of factors such as increased service automation, a unified architecture, and centralized management systems.

> **"There are no more barriers to stop us entering the cloud. We expect our new service model to enable us to win more business, and give customers more choice and an all-round better experience."**
>
> **–Pieter Gabes, Chief Executive Officer, Parentix**

Next Steps

Parentix will continue to develop and promote its SaaS model, using the new portal and working with its new reseller partners. The company is phasing out its traditional data center equipment and migrating services on to the new platform. In spite of its smaller footprint, the Cisco solution will support future business growth in an agile and cost-effective way, and Parentix is pleased with its new data center architecture.

"There are no more barriers to stop us entering the cloud," says Gabes. "We expect our new service model to enable us to win more business, and give customers more choice and an all-round better experience."

PRODUCT LIST

Data Center

- Cisco Unified Computing System
- Cisco Nexus 5000 Series Switches

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
Amsterdam, The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at **www.cisco.com/go/offices.**

Dutch Service Provider Unifies its Data Center

PINS prepares for virtualization, SaaS, and cloud computing opportunities in the Netherlands.

EXECUTIVE SUMMARY

Customer Name: PINS

Industry: Service provider

Location: Netherlands

Company size: 55 employees

Challenge

- Maximize new market opportunities and operating efficiencies by creating a more dynamic, on-demand data center model

Solution

- Cisco Data Center 3.0 vision, architecture, and technologies
- Cisco Unified Computing System

Results

- Easier and faster to provision services
- Reduction in total cost of ownership
- Improvements in flexibility and server utilization

Challenge

PINS is one of the leading providers of hosting and managed services in the Benelux. It protects the e-business of over 15,000 customers by delivering support to their critical processes with solutions for Internet services, managed hosting, software as a service (SaaS) and hosted desktop solutions.

PINS uses a number of high-quality data center facilities in Amsterdam, which are connected via a fully redundant Cisco fiber infrastructure and continuously monitored by a central Network Operating Centre. The IP backbone allows data to be mirrored and distributed over several locations. As well as delivering high availability, the network design also includes Cisco® ASA firewalls, which help ensure secure open peering and allow PINS to maximize traffic exchange with as many Internet service providers as possible.

The server farm is managed using HyperGrid, a VMWare-based hosting platform that lays a virtual layer on top of the physical servers. Having started the process of consolidation and virtualization, PINS wanted to find a way to increase capacity to support SaaS and cloud computing applications, while also making its data center environment more flexible and less labour intensive.

"In the past, data centers were built to cope with maximum demand," says Jan Willem des Tombe, CEO for PINS. "Today it's a whole new ball game. Our customers are looking for a more flexible arrangement. They want to be able to rapidly scale up and scale down storage and compute resources, and to only pay for the services they use. In order to do this, we needed to create a more dynamic 'on-demand' operating model."

> **"You cannot achieve virtualization by reading any one white paper. In our case, we use a range of technologies from IBM, EQllogic, Intel, HP, VMware, and Cisco. UCS gave us a practical path to unify this mixed environment and extend our virtualization strategy."**
>
> **–Etienne van Rijn, Manager Infrastructure and Solutions, PINS**

Solution

PINS' vision is aligned to Cisco Data Center 3.0, an architectural approach for data center evolution that uses a three-phase methodology: *consolidate*, *virtualize*, and *automate*. The end result is tighter integration of servers, networks, and storage systems, which in turn helps to deliver new improvements in performance and cost efficiency.

The first stage of this strategy has seen PINS implement the Cisco Unified Computing System™ (UCS), a next-generation data center platform specifically built to accelerate the virtualization process.

"You cannot achieve virtualization by reading any one white paper," says Etienne van Rijn, manager infrastructure and solutions at PINS. "In our case, we use a range of technologies from IBM, EQllogic, Intel, HP, VMware, and Cisco. UCS gave us a practical path to unify this mixed environment and extend our virtualization strategy."

Virtual machine (VM) portability, or live migration, is central to server virtualization. However, a number of challenges inhibit its broader adoption. These challenges include:

- Inability to apply security and policy at the VM level and have that policy move with the VM
- Lack of visibility into VMs, which complicates accounting and troubleshooting
- Organizational challenges introduced by the virtualized environment.

Powered by the latest breakthrough in Intel processor technology, the Cisco Unified Computing System removes these barriers by combining with VMware vSphere to radically simplify data center architecture. This simplification is achieved by using pioneering Cisco VN-Link technology that is embedded in the UCS blade servers. The virtual links communicate directly with the network interface cards and virtual interfaces on the parent switch, allowing quality of service and security to be managed on a per-virtual machine basis.

So, for example, when UCS port profiles are associated with VMware port groups to move a VM from one physical server to another, that event is signaled to the data center network and SAN, and the appropriate network profile and storage services move with the VM.

Intel Xeon Processor 5600 series enables better CPU power management. With this innovation, PINS can align power consumption with workload requirements, dynamically assigning capacity with push-button simplicity.

"We can take advantage of other Cisco Unified Computing System innovations, such as memory expansion and the Virtualized Network Interface Card, which combined with the power of the Intel Xeon Processor 5600 series, will improve energy efficiency and server performance further still," says van Rijn.

Importantly, this approach introduces new levels of automation and makes it easier to administer policies for VLAN membership, traffic shaping, I/O filtering, network addresses, and so on. Application performance is also improved, because CPU cycles are not consumed in switching packets, leaving more cycles available to deliver application performance.

> **"We decided to go with the Unified Computing System without seeing or touching the solution. That's how much faith and trust we have in Cisco. If they say it will work, we know it will."**
>
> **–Jan Willem des Tombe, CEO, PINS**

PINS can also take advantage of a unified fabric, which allows both Ethernet and Fibre Channel traffic to travel through the same cable, resulting in less cabling, fewer components, and fewer points of management. The installation also included a customized solution to protect PINS' investment in Internet Small Computer System Interface (iSCSI) technology. This solution enables data blocks to be read from, or sent at high speed, to existing storage disks and tape drives using Ethernet Internet Protocol (IP).

Results

The Cisco Unified Computing System provides PINS with the first steps towards its goal to build a platform where SaaS, virtualization, and the cloud work together to make on-demand IT services more accessible and manageable. "We decided to go with the Unified Computing System without seeing or touching the solution, says des Tombe. "That's how much faith and trust we have in Cisco. If they say it will work, we know it will."

PINS data centers will be among the first in the Netherlands to benefit from breakthrough Cisco technology. The solution is expected to deliver several new advantages.

Capital expenses can be reduced through further consolidation of cabling and hardware. In addition, greater flexibility to mix dedicated servers with the VM platform will help PINS to optimise server utilization rates and scalability. Rack requirements, a major expense for hosting providers, are also significantly reduced. "The UCS solution only takes up one rack compared to a traditional three-rack approach," says van Rijn. "Also, it's easier to build out, because all the power is fully utilized. We rent our space, so that's a saving that goes straight back onto our bottom line."

Although each customer deployment is different, based upon internal modelling and early customer data, the UCS can:

- Lower site costs by as much as 20 percent
- Reduce platform costs by up to 15 percent
- Cut organizational costs by as much as 35 percent.

Improving bridging and communications between the server, storage, and network management domains is also expected to provide operational efficiency gains. For example, tight integration of Cisco UCS Manager and VMware vCenter will make virtual machine movement more efficient and secure. In turn, this capability will allow PINS to better balance workloads, increase availability, and implement disaster-recovery strategies.

The UCS makes it easier and faster to provision, because users only have to configure once. "We no longer have to create separate VLANs each time on the switch, vCenter, router, and firewall," says van Rijn. "We simply build the template and point it to the new blade. The device then automatically gets the information it needs from the SAN and reboots itself. As well as increasing staff productivity, we believe these new levels of automation will also help to improve customer experience, both in terms of recovery times and offering higher SLAs."

These changes will enable PINS to transform its business model and improve the services that it currently offers. As well as benefits, such as the ability to reduce servers and carbon footprint, taking a Cisco Data Center 3.0 approach provides PINS customers with the opportunity for much improved business agility.

One of these customers, a leading worldwide drinks retailer, has deployed Cisco Nexus® 5010 Switches with Fibre Channel over Ethernet (FCoE) capability within its U.S. operations. This deployment has helped to consolidate 80 servers onto four, with 20 virtual machines and multiple SANs into one, while also reducing cabling costs by 30 to 60 percent.

Cloud computing provides the retailer with the ability to rapidly scale IT and storage resources to better support specific advertising campaigns and to optimize its supply chains to meet increased demand. Alternatively, for a global car manufacturer, being able to share applications more efficiently and effectively via the cloud can help to accelerate R&D, production, and distribution timescales.

Next Steps

To get the full benefit of the UCS solution, PINS intends to use the results from customer trials to inform the second stage of this strategy, which will focus on the redesign of its core infrastructure.

"The next logical evolution would be to upgrade our Cisco Catalyst switches to the Cisco Nexus family of Data Center switches," says van Rijn. "This will provide us with even greater levels of network virtualization and 10 Gbps networking speeds. It will also improve inter-communication between physical and virtual servers by reducing the distance and number of devices that the data has to travel through."

PRODUCT LIST

Data Center

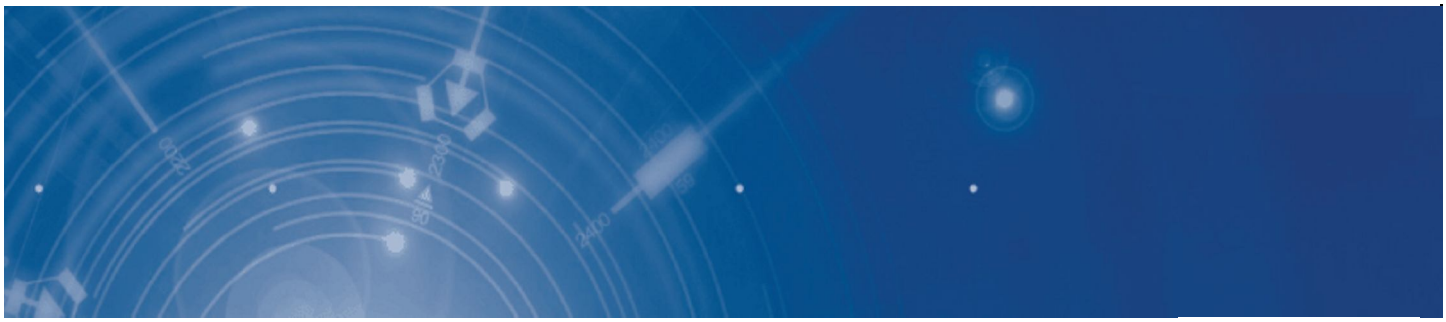
- Cisco Unified Computing System

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
Amsterdam, The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at **www.cisco.com/go/offices.**



Gartner

Magic Quadrant for Blade Servers

6 October 2009

Andrew Butler, George J. Weiss

Gartner RAS Core Research Note G00170419

This new blade server Magic Quadrant focuses on a market that is outgrowing that of all other server form factors. Most vendors are now investing in the market, and many Gartner clients are standardizing on this technology for their data center deployments.

What You Need to Know

Blades represent an important stage in the evolution of servers as separate, discrete platforms give way to modular designs and the boundaries between servers, storage and networking become increasingly porous. Due to their modular nature, blades offer compelling operational benefits, such as improved cabling, rapid hardware provisioning, high compute density and increasing management automation. But blades deliver few, if any, application benefits compared with their rack- and tower-based peers, and the market lacks vendor interoperability standards. Blades are not the only choice for modular deployment, but they represent a much greater lock-in effect than regular rack servers impose, and return on investment (ROI) calculations need to be more stringently applied. Users should match their blade needs and investment objectives carefully to vendor portfolios, product life cycles and vendor strategies for modular architectures as a whole.

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Magic Quadrant

Figure 1. Magic Quadrant for Blade Servers

Vendors Added or Dropped

We review and adjust our inclusion criteria for Magic Quadrants and MarketScopes as markets change. As a result of these adjustments, the mix of vendors in any Magic Quadrant or MarketScope may change over time. A vendor appearing in a Magic Quadrant or MarketScope one year and not the next does not necessarily indicate that we have changed our opinion of that vendor. This may be a reflection of a change in the market and, therefore, changed evaluation criteria, or a change of focus by a vendor.

Evaluation Criteria Definitions

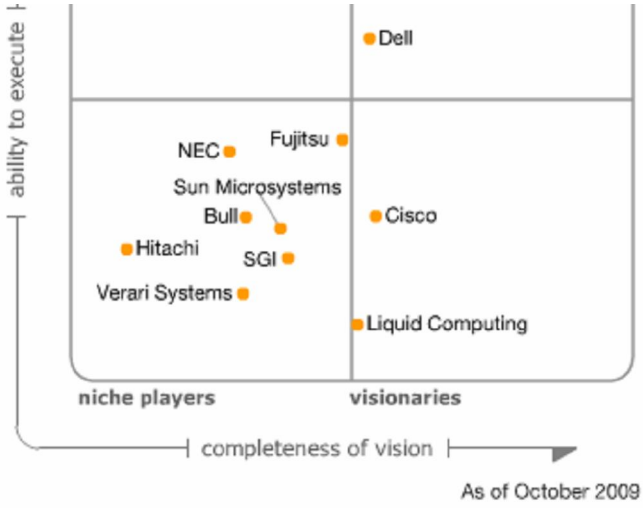
Ability to Execute

Product/Service: Core goods and services offered by the vendor that compete in/serve the defined market. This includes current product/service capabilities, quality, feature sets and skills, whether offered natively or through OEM agreements/partnerships as defined in the market definition and detailed in the subcriteria.

Overall Viability (Business Unit, Financial, Strategy, Organization): Viability includes an assessment of the overall organization's financial health, the financial and practical success of the business unit, and the likelihood that the individual business unit will continue investing in the product, will continue offering the product and will advance the state of the art within the organization's portfolio of products.

Sales Execution/Pricing: The vendor's capabilities in all pre-sales activities and the structure that supports them. This includes deal management, pricing and negotiation, pre-sales support and the overall effectiveness of the sales channel.

Market Responsiveness and Track Record: Ability to respond, change direction, be flexible and achieve competitive success as opportunities develop, competitors act, customer needs evolve and market dynamics



Source: Gartner (October 2009)

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Market Overview

The blade server market is not new, and is rapidly evolving with a gradual transition toward data center fabrics that will drive the market toward more-porous barriers between compute, storage and networking technology. Blades are not an essential part of this technology convergence, but the modular nature of blades makes them a natural fit for the trend.

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Market Definition/Description

A blade server is a modular device that fits, together with other blades (which may not all be servers), into a custom-designed chassis to create a fully functioning system. The chassis provides power and cooling provisioning to all blades, plus various common management functions. Via the back-plane, blades can also provide connectivity from server to server, or from server to storage or the network, but network and storage input/output (I/O) can also be directly routed to the blades. Blade servers can have onboard storage or be completely diskless, with operating system booting done from the storage area network (SAN). Most blade chassis are designed for blades to be vertically mounted, but this is not essential and there are exceptions. Blades can, in theory, have any number of processors from any processor type, although it is normal for blade servers to be low-end devices with no more than four processors. It is normal for blades with higher complements of processors or storage to be wider, so that two or more chassis slots are consumed. Such blades are sometimes known using terminology like "bricks." Blade chassis capacity can vary, and may be populated with blades of different types, including nonserver devices like storage devices and network switches or other I/O modules for added connectivity. Most blade chassis are designed to fit within standard 19-inch racks, but some enterprise blade platforms are based on other dimensions. Blades are not the only form of modular server. We see emerging markets for "twin servers" and other ultradense, rack-optimized form factors that also exhibit modular qualities.

The original concept of blade servers was introduced to the market a decade ago by small, specialist companies, such as RLX Technologies and FiberCycle Networks. The target market for this first generation was large Internet data centers, and early demand was driven by the ill-fated dot-com boom. When the service provider market collapsed, mainstream server vendors started to introduce blades for the broader enterprise data center market. The most prevalent applications for blade servers tend to fall into the front-end and midtier of the data center. Front-end applications depend more on fast throughput than on raw processing power, so they may be installed on blade servers with just one or two

needs evolve and market dynamics change. This criterion also considers the vendor's history of responsiveness.

Marketing Execution: The clarity, quality, creativity and efficacy of programs designed to deliver the organization's message to influence the market, promote the brand and business, increase awareness of the products, and establish a positive identification with the product/brand and organization in the minds of buyers. This "mind share" can be driven by a combination of publicity, promotional initiatives, thought leadership, word-of-mouth and sales activities.

Customer Experience: Relationships, products and services/programs that enable clients to be successful with the products evaluated. Specifically, this includes the ways customers receive technical support or account support. This can also include ancillary tools, customer support programs (and the quality thereof), availability of user groups, service-level agreements and so on.

Operations: The ability of the organization to meet its goals and commitments. Factors include the quality of the organizational structure, including skills, experiences, programs, systems and other vehicles that enable the organization to operate effectively and efficiently on an ongoing basis.

Completeness of Vision

Market Understanding: Ability of the vendor to understand buyers' wants and needs and to translate those into products and services. Vendors that show the highest degree of vision listen to and understand buyers' wants and needs, and can shape or enhance those with their added vision.

Marketing Strategy: A clear, differentiated set of messages consistently communicated throughout the organization and externalized through the website, advertising, customer programs and positioning statements.

Sales Strategy: The strategy for selling products that uses the appropriate network of direct and indirect sales, marketing, service and communication affiliates that extend the scope and depth of market reach, skills, expertise, technologies, services and the customer base.

Offering (Product) Strategy: The vendor's approach to product development and delivery that emphasizes differentiation, functionality, methodology and feature sets as they map to current and future requirements.

Business Model: The soundness and logic of the vendor's underlying business proposition.

Vertical/Industry Strategy: The vendor's strategy to direct resources, skills and offerings to meet the specific needs of individual market segments, including vertical markets.

Innovation: Direct, related, complementary and synergistic layouts of resources, expertise or capital for investment, consolidation, defensive or pre-emptive purposes.

Geographic Strategy: The vendor's strategy to direct resources, skills and offerings to meet the specific needs of geographies outside the "home" or native geography, either directly or

processors. Blade servers for front-end applications may need just one internal disk, or perhaps two for mirroring. Midtier applications usually require more-powerful blade configurations with more memory and I/O capacity. These larger blade servers can support transaction processing applications or small database applications, and they can be a suitable basis for virtualization hosting. Larger blade servers may require more internal disk space on the blade server, but they are increasingly likely to rely on data stored on a SAN. Early examples of blade-based data center fabrics depended on the ability to boot from a SAN, with the role of onboard storage declining.

The market for hosted virtual desktops (HVDs) is another fast-growing segment where the use of blades is viable. Blade servers may also be clustered to form a high-performance computing (HPC) cluster. Users have frequently regarded blades and server virtualization as alternative methods to gain more-granular resource utilization, but the modern generation of blades is as well-suited to the use of virtualization tools as any other form factor.

Applications that may take advantage of an HPC cluster include scientific and technical applications. Until the advent of the recent recession, the blade server market was growing at 20% compound annual growth rate (CAGR) compared with low single-digit growth for other server form factors. Although growth has slowed, demand for blades remains strong, and blades will comprise an ever-growing proportion of total server sales. However, it must be remembered that blades still represent less than 15% of the total server market today. Because they favor smaller and less-challenging workloads, the majority of blade deployments favor x86 architectures. But vendors like HP, IBM and Sun Microsystems ship non-x86 blades, primarily targeted at Unix users. Blade servers are well-suited as test and development platforms in Unix organizations. HP's NonStop fault-tolerant platform is also blade-based, demonstrating that blade technology can be deployed for even continuous availability workloads. But blade servers are less likely to be installed in production environments for complex applications, such as high-end database serving, data warehousing, ERP and CRM. Although vendors may claim that their high-end blade server models are appropriate for these kinds of applications, we recommend that customers remain cautious about running their most-demanding applications in blade environments, and demand valid references and proof points.

Due to strong promotion by both IBM and HP, the blade server market is very imbalanced, with 70% of revenue achieved by the two vendors today. But with so much investment in the concept, and with a strong CAGR that will erode the market for other server form factors, the blade server market offers a compelling opportunity for many other vendors — particularly those that focus on more-specialized geographic, verticalized or workload niches.

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Inclusion and Exclusion Criteria

Blades constitute a segment of the overall server market that is defined by its modular deployment, and not all server vendors invest in blade technology. The main catalysts for inclusion in this Magic Quadrant are active international market presence and sales volume of at least $5 million in 2009. That means obvious inclusion for the two vendors (HP and IBM) that represent the majority of blade shipments worldwide, plus eight vendors that have strong commitment to the market, albeit sometimes in niche deployments, plus two additional vendors (Cisco and Liquid Computing) that are relatively new to this market and, therefore, have a limited track record to date. But Cisco and Liquid Computing's blade-based strategies are potentially highly disruptive and represent the transition toward fabric-based technology convergence. A small number of blade vendors have been excluded either because their market presence is geographically very narrow (that is, they support just one or two countries) or because they are legacy vendors that mainly address an installed base market where there is little or no new business that we can evaluate.

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through partners, channels and subsidiaries as appropriate for that geography and market.

Evaluation Criteria

Ability to Execute

Until recently, blades had been regarded as a distinct server form factor that addressed different market needs compared with tower-, rack- and frame-based servers. But all blades, by definition, leverage standard 19-inch rack-based topologies, and with each generation, the distinction between blades and conventional rack-based servers becomes more blurred. So blades become a hybrid solution that exploits the standardization of the 19-inch rack form factor, while imposing proprietary integration within the chassis.

Blade market execution is achieved through one or both of two methods. Large, established vendors with a strong installed base of rack-optimized servers are in a natural position to advocate the use of blades as a mainstream evolution, while smaller vendors are able to leverage the advantages of blades for certain workload requirements where they can excel in a more niche-oriented market. For the larger vendors, blades introduce a new positioning challenge that can impact execution effectiveness, while more niche-oriented vendors must work to evolve their target markets and maintain added value.

Table 1. Ability to Execute Evaluation Criteria

Evaluation Criteria	Weighting
Product/Service	high
Overall Viability (Business Unit, Financial, Strategy, Organization)	high
Sales Execution/Pricing	standard
Market Responsiveness and Track Record	high
Marketing Execution	standard
Customer Experience	high
Operations	standard

Source: Gartner (October 2009)

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Completeness of Vision

If we assume that data center infrastructure will become steadily more granular and component-based, then blades are the natural stepping stone to this state. Vendors currently at the leading edge of data center fabrics are typically using blades as the foundation for their work. Blades put an additional onus on the functionality and close integration of server management tools, which favors vendors that are either leaders in this field or that have strong tool integration with partners.

The latest generations of x86, reduced instruction set computer (RISC) and Itanium processors are enabling blades to address more-challenging workloads. This, in turn, puts pressure on the I/O capabilities of blades — be it server-to-server connectivity for increased scaling or storage/network connectivity. Leading-edge vendors will be investing in processor and memory aggregation to address larger and more-complex workloads, with multichassis and even multirack aggregation as the ultimate manifestation. By aggregation, we mean the logical and scalable integration of multiple components, such as CPU and memory.

Table 2. Completeness of Vision Evaluation Criteria

Evaluation Criteria	Weighting
Market Understanding	high
Marketing Strategy	standard
Sales Strategy	standard
Offering (Product) Strategy	high

Business Model	standard
Vertical/Industry Strategy	low
Innovation	high
Geographic Strategy	low

Source: Gartner (October 2009)

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Leaders

With a decade of shipments and product evolution, blade market leaders will need an enduring track record across multiple geographies, vertical markets and workload scenarios. This is a highly polarized market, where two entrenched vendors already command more than 70% of worldwide business by revenue and units. Although we predict organic growth for the market, the polarized nature presents a challenge to other vendors seeking volume.

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Challengers

Challengers are likely to be vendors with a strong global presence that are focusing their blade strategies on a broad set of target clients, rather than pure innovation. As the markets for rack optimized servers and blade servers gradually converge, mainstream server vendors with strong natural ability to execute will increasingly target the blade market.

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Visionaries

While this is a market that will always attract innovators, the market is stabilizing and maturing rapidly. Visionary vendors in this market will either represent the discontinuous leading edge of the market or they will be large vendors with a plan to drive market success through technology innovation and a narrower product portfolio.

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Niche Players

The early pacemakers in the blade server market have all either been acquired or are in decline. But this is a market that addresses specialized "edge" niches of the broader server market well, and this will naturally drive innovation by small vendors that may only address certain geographies, verticalized markets or workload situations. Consequently, this is a Magic Quadrant that will always have a strong complement of niche vendors that drive innovation, but whose small size or narrower geographic focus force them to target their energies.

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Vendor Strengths and Cautions

Bull

Bull sells a range of 7U and 9U blade form factors, plus the new bullx platform, which is targeted at HPC and other extreme scaling requirements. While the company's focus is primarily aimed at the x86 market, Bull also supports Power processors in its Blade Series Enterprise family.

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Strengths

- Bull has strong vertical-industry expertise.
- The company is a well-established HPC market contender with a strong presence.
- The company has OEM agreements in emerging markets.
- Bull is committed to technology innovation, especially energy efficiency and cluster management.

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Cautions

- A restricted regional presence limits Bull's potential as a global vendor.

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Cisco

Cisco is a nascent blade server vendor, having just entered the market in 2009 via technology gained as a result of its Nuovo acquisition. Cisco's Unified Computing System (UCS) is highly innovative and is particularly targeted at highly integrated and virtualized enterprise requirements. Although it is new to the market, we believe that Cisco will aggressively drive its blade strategy to increase wallet share in accounts where Cisco already has a strong influence. Cisco has bold ambitions to achieve volume market acceptance, but the company will have to work hard to build alliances with independent software vendors (ISVs), integrators and channel partners to overcome market behavior that is entrenched around just two vendors. To overcome its inexperience and lack of peripheral components in a mature server market, Cisco has chosen to target channel partners that have a history in selling servers.

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Strengths

- Cisco is a global powerhouse with presence in most data centers.
- UCS is a differentiated, fabric-based enterprise-class platform with good integration of networking, virtualization, management tools and storage.
- The company has cross-selling opportunities to the extensive Cisco installed base.
- Cisco has strong partnerships with virtualization and management tool vendors, as well as integrators.

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Cautions

- Cisco lacks a server market track record and installed base upon which to leverage.
- The company's strategy is dependent on alliances with management tool vendors and storage vendors to create a complete offering.
- Strategic alliances with key operating system and application vendors are relatively untested in an environment where Cisco is a server vendor.
- Cisco only has an enterprise-class solution with a limited portfolio to date.

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Dell

After some years of opportunistically addressing the blade server market, Dell has recruited talented engineers from rival vendors, which culminated in the launch of its latest generation of blade servers in 2007. Dell is also developing collaborative relationships with vendors like Scalent Systems and Egenera. Dell offers Intel Xeon and AMD Opteron blade servers that are well-engineered, enterprise-class platforms that fit well alongside the rest of Dell's x86 server portfolio, which has seen the company grow its market share steadily through the past 18 months.

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Strengths

- Dell has extensive cross-selling opportunities since it is a mainstream, x86 server market leader.
- The company has strong investments in the latest platforms.
- Dell has an aggressive pricing policy.
- Dell has focused innovation in areas like cooling and virtual I/O.

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Cautions

- Dell has a limited portfolio that is targeted at enterprise needs.
- Consistent execution is required to dispel the company's prior history of patchy commitment.

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Fujitsu

Fujitsu restructured its global sales and marketing operations in April 2009, which should lead to more-consistent sales execution and product branding for all platforms. The company offers a broad range of blade offerings, including its new high-end PRIMERGY BX900 Dynamic Cube platform and an established marketing and support relationship to OEM Egenera's blade platforms in Europe, the Middle East and Africa (EMEA).

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Strengths

- Fujitsu has a strong portfolio of products.
- The company has good technology innovation, especially in the PRIMERGY BX900 Dynamic Cube server, which will compete with Cisco's UCS and HP's BladeSystem Matrix.
- Fujitsu has a vertical and regional market expertise.
- The company has an installed base in many regional markets from which to leverage.

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Cautions

- Fujitsu's new global structure (while welcomed by Gartner) is still young and relatively unproven.
- The company has a limited track record as a volume supplier outside Japan and Western Europe.

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Hitachi

Although less-known outside Japan, Hitachi's BladeSymphony blades are well-established and address a broad set of requirements. Hitachi is a technology innovator, especially in the field of aggregation and virtualization.

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Strengths

- Hitachi has a well-proven platform with a strong Japanese installed base.
- The company offers chassis options that address both enterprise and workgroup/departmental/branch requirements.
- Hitachi is committed to technology innovation, particularly in I/O and memory aggregation, as well as hardware-embedded virtualization.

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Cautions

- Hitachi's sales and marketing execution in Western markets is passive and less-proven.
- Hitachi has a limited account presence outside Japan.

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HP

Building on the acquisitions of Compaq and RLX Technologies, HP has been a blade market leader throughout this decade. Since the 2006 introduction of its latest blade generation, HP has recaptured market leadership and now sells more blade servers than the rest of the market combined. HP offers a broad range of Intel Xeon, AMD Opteron and Intel Itanium blades around two chassis form factors, plus more-specialized NonStop blades for continuous availability. The new BladeSystem Matrix is a fabric-style offering aimed at high-end enterprise needs where strong integration of compute, network and storage is an asset.

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Strengths

- HP is a blade market volume leader in all geographies.
- The company has extensive cross-selling opportunities, as HP is also the leading x86 server vendor.
- HP has a strong track record in management tools.
- HP has chassis options that address data center, workgroup/departmental/branch and continuous availability requirements.
- The company supports x86 and Itanium-based blades.
- HP is committed to blade innovation, particularly around virtual I/O, cooling, infrastructure autoprovisioning, aggregation and the new BladeSystem Matrix.

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Cautions

- HP has a complex portfolio of rack and blade servers that requires careful positioning (especially with the new push into extreme scaling workloads with alternative, modular, rack-based technology).

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IBM

IBM and Intel entered the blade market in 2002 with a joint collaboration effort that saw IBM target its blade strategy toward enterprise clients, while Intel resold the technology through various hardware partners. Since the original launch of IBM's blade platform in 2002, the company has extended its portfolio constantly and has rapidly achieved volume

has extended its portfolio constantly and has rapidly achieved volume market leadership, which has only recently been lost to HP. But IBM still ships more than twice the number of blade servers as its next competitor. IBM is putting new initiatives in place to regain market share, including supply chain enhancements, dedicated sales resources and new channel programs. With five different enclosures, IBM can address a very broad set of requirements that include extreme scaling, direct current (DC) power and Network Equipment-Building System (NEBS) compliance, and yet all IBM blades are interoperable between all five chassis options.

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Strengths

- IBM has strong market share in all geographies.
- The company has extensive cross-selling opportunities, as IBM is a mainstream, x86 server market leader.
- IBM has the broadest set of chassis options that address both enterprise and workgroup/departmental/branch requirements, plus more-specialized needs.
- IBM supports x86 and RISC (power)-based blades.
- The company has a strong track record in management tools.
- IBM is committed to blade innovation, particularly around cooling and specialized workloads.

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Cautions

- After a sharp reduction in market share during 2007 and 2008, IBM is now refocusing its efforts on recovery, but the initiative is still young and there are not yet enough statistics in place to show that the recent successes of vendors like HP and Dell have been checked.

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Liquid Computing

Liquid Computing is a relatively new vendor that is privately funded. The company earns inclusion in this Magic Quadrant through its strong commitment to innovation. Targeted initially at HPC requirements, the LiquidIQ blade platform has developed into a leading-edge, fabric-based solution that integrates compute, network and storage capability in a single, managed platform aimed at enterprise requirements. To extend its reach further, the company is also pursuing collaborative technical and marketing partnerships with established data center vendors.

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Strengths

- Liquid Computing has a leading-edge, fabric-based solution.
- Liquid Computing has strong partnership ethics and commitment to standards.
- The company is committed to blade innovation, particularly around virtual I/O, cooling and power.

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Cautions

- Liquid Computing has a narrow portfolio geared toward the enterprise market.
- The company has a limited track record with relatively few users in a narrow selection of vertical industries and geographic locations.

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NEC

NEC, like other Japanese vendors (such as Fujitsu and Hitachi), frequently lacks recognition in Western markets for the breadth and sophistication of its blade server portfolio and corporate strengths. NEC Express5800 SigmaBlade server and express offerings address a broad range of needs, while the Express chassis can support both Intel Xeon and Itanium processors. NEC is gradually expanding its local sales and marketing focus in both EMEA and North America.

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Strengths

- NEC has a strong Japanese installed base.
- The company has chassis options that address both enterprise and workgroup/departmental/branch requirements.
- NEC is committed to technology innovation.

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Cautions

- NEC has a limited account presence outside Japan.
- The company's international sales and support infrastructure is still at a nascent stage for server deployments.

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SGI

SGI's Altix ICE technology primarily addresses HPC market requirements, where SGI has an enviable market track record. Consequently, SGI is able to leverage its installed base (and now that of Rackable Systems, which acquired SGI in early 2009). Although there will be convergence of Rackable and SGI technology, the Altix ICE platform is well-regarded and likely to survive.

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Strengths

- SGI is an established HPC leader.
- SGI has new cross-selling opportunities in the Rackable installed base.
- The company is committed to technology innovation.
- Ownership by Rackable Systems should dispel most user fears around SGI's financial viability.

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Cautions

- The convergence of SGI and Rackable technology could cast doubt over platform survival.
- Integration of Rackable and SGI sales and support organizations could create localized quality of service issues.
- SGI's market presence is mainly limited to HPC and markets with similar workload characteristics.

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Sun Microsystems

Sun offers two separate blade families that address a broad range of workload requirements, although component interoperability between them is limited. Since the launch of the 6000 blade family in 2007, Sun has been able to grow its blade market share aggressively. As with any

has been able to grow its blade market share aggressively. As with any acquisition, the plans by Oracle to purchase Sun create doubts over platform longevity that the new organization must dispel through timely publication of ratified product road maps and sales initiatives.

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Strengths

- Sun has a broad range of blade offerings that include Intel Xeon, AMD Opteron, UltraSPARC III and CMT variants.
- The company is able to address specialized blade markets, such as extreme scaling and NEBS compliance.
- Sun is committed to technology innovation, particularly around energy management, InfiniBand support and other I/O enhancements.

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Cautions

- The survival prospects for Sun's blades are good, but market uncertainty will only be addressed through rapid publication of revised road maps once the Oracle acquisition has closed.
- To maintain momentum, the new organization particularly needs to dispel doubts over the strategic roles of UltraSPARC and Solaris (especially the x86 variant).

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Verari Systems

After initially establishing itself as an HPC market contender, Verari has expanded its focus to encompass Web-based scale-out applications and complex workloads that would often fall outside the target markets of more-mainstream vendors. Verari is recognized as a technology leader in the current market, able to address a wide range of performance, scaling and connectivity needs through its ability to customize solutions.

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Strengths

- Verari is committed to technology innovation, particularly power, cooling, extreme density and container-based solutions.
- The company has strong customization capabilities.

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Cautions

- Verari has a relatively small customer base.
- The vendor has a limited track record outside North America.

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Cisco Expands Its UCS Portfolio and Quadruples Its Addressable Market

June 03, 2009 - IDC Link

Comment by Michelle Bailey

Cisco today announced an expanded portfolio of solutions for its recently shipped Unified Computing System (UCS) at its Partner Summit in Boston. Cisco highlighted three key additions to its computing portfolio:

- A standard rack-based version of UCS servers
- A new go-to-market channel program for UCS
- New IT certifications that span multiple datacenter technologies brought together by UCS

Cisco previously announced its Unified Computing System in March; it is an integrated solution of compute, network, storage access, and virtualization resources. This system is built using standard x86 server architectures in a blade enclosure in conjunction with Cisco's Fabric Extender technology. The system is targeted at addressing the major challenges that customers are currently facing in very large datacenter environments and is geared toward easing the increasing complexities of the future datacenter. Read IDC's detailed analysis here.

Today's announcement is significant in two ways. First, it demonstrates that Cisco is prepared to continue to invest in the UCS offering, and second, the company is listening to its customers and partners. What this announcement really tells us is that Cisco is aggressively promoting UCS to the market and is willing and capable of integrating improvements quickly into its portfolio. This announcement also underscores that Cisco's mission to reduce datacenter complexity is at the core of the engineering and marketing of UCS. When this product initially came to market, it was mistakenly hyped in the media as a new blade server alternative and was naively perceived as Cisco's attack on one of the fastest growing segments of the server market. The announcement of a rack-based solution clearly demonstrates that Cisco is looking far beyond being a blades antagonist and is squarely focused on simplifying IT environments, especially with regard to virtual server deployments. Cisco has recognized that virtualization customers are increasingly acting as their own systems integrators in deploying large virtual environments and performing the necessary tuning, which includes not only investments in servers with large memory footprints but also escalating demands on storage and networking environments (which requires changing processes between these traditionally adjacent IT groups). UCS messaging continues to be focused on driving up virtual machine (VM) consolidation ratios and moving from server-based cost models to application-based cost models.

IDC believes that today's announcement will significantly lower the barrier to UCS adoption among customers and partners. Not all customers want a blade. Not all partners can therefore sell a blade solution. In fact, less than 15% of all new servers shipped in 2008 were blade servers. Rack-based servers accounted for 57% of new server sales. By offering a rack-based UCS solution, Cisco just quadrupled its addressable market. In addition, the introduction of rack-based servers lowers customer concerns for product and vendor lock-in that continue to plague bladed solutions. And while customers will be free to deploy these servers as general-purpose solutions, IDC believes that UCS customers will choose a Cisco solution because they think it will lower their upfront deployment and ongoing management costs for large virtual environments. Make no mistake, UCS is built from the ground up for virtualization — not only does it have 48 DIMM slots that can hold 384GB of memory as well as adapters for increased numbers of PCI slots, but it also exploits embedded virtualization technologies such as hypervisor bypass and, most importantly, an embedded management solution for building service profiles around virtual machines.

IDC also believes that Cisco's channel announcements and the creation of a Unified Datacenter VAR program will be well received by channel partners, particularly as this announcement includes two new IT certification programs that we believe will be very appealing to both partners and IT administrators who are increasingly being asked to improve their knowledge across multiple lines of technology. See Janet Waxman's take on this announcement for more channel perspectives.

Cisco's challenge remains execution and market perception. It's difficult to be the new entrant in an already highly competitive market, and Cisco will be judged on its ability to deliver on what it promises. Cisco has laid out an aggressive timeline for these new product enhancements for the second half of 2009 and throughout 2010, but it has made it clear that it intends to carve out its place in the emerging integrated datacenter.

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Cisco Announces Unified Computing — Creates Its Own Partner Ecosystem

March 16, 2009 - IDC Link

Comment by Janet Waxman

John Grady contributed to this link.

On March 16th, Cisco announced the Unified Computing System. From a channels perspective, this was not only about technology, it raised the bar on the partner ecosystem. The evolution of partner communities is something that has been growing for many years, sometimes under the radar screen; two with more visibility are Ingram Micro's Venture Tech Network and Tech Data's Tech Select program. The Cisco announcement, which included technology from a variety of partners, not only introduced a new technology to customers but also created the absolute necessity for a true partner ecosystem, which will be required for the success of this product. While the Unified Computing System itself is initially a largely direct play for now, the services and implementation component is incredibly important as the new system will tie together networking, storage, virtualization and datacenter components. Cisco has recognized this by creating an Authorized Technology Provider (ATP) Program for Unified Computing.

Initially this ecosystem will be composed largely of the supplier community, with a few select go-to-market partners, specifically those that are focused on the very high end of the market. The roster will likely grow in the short term to ensure that customer demand can be met. Cisco is driving this effort and is going to work with select Data Center Specialized partners. The company is also planning to "develop a channel program that will enable and accelerate the sales of the Unified Computing product that will include technology from the technology partners, bringing together the hardware and infrastructure software components, that are included in this announcement. Each of these alliance partners also works with indirect partners, and IDC has known for a long time that these two groups are often the same partners, or have worked collaboratively for many years. To that end, some of the Cisco partners are also skilled and certified to sell and service other supplier partners' technology in this network, but IDC would argue that the number of partners that are skilled in all of these technologies, outside of potentially the largest system integrators, lays the foundation for the next-generation partner ecosystem. The question is, will Cisco be able to pull these partners together. In practice, IDC believes that Cisco, which is a very efficient company, has the capability and capacity to do this. The question is, how much demand will be in the market that will drive partners towards this solution. Assuming that the market demand grows, it will be incumbent on Cisco to align at the next level with its supplier partners to create a true partner-to-partner network that incorporates the partner communities of the suppliers.

If Cisco is able to do this, it may in fact build the largest cross-supplier partner network in the market. Many suppliers do have large partner ecosystems, but few if any have been able to pull together this breadth of partners that allows the partners to complement each other to deliver a true solution. This announcement is a system but a platform for enormous partner growth through advanced collaboration.

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Infrastructure Channels and Alliances

EVENT FLASH

Gloves Off! Cisco Crosses Blades with Long-Time Friends With Introduction of Holistic and Innovative Datacenter Strategy

Adrian Dominic Ho Sandra Ng
Avneesh Saxena

IN THIS EVENT FLASH

On March 16, 2009, Cisco unveiled its long-awaited entry into the blade server market, codenamed California, throwing another kink in the battle for datacenter supremacy. At the launch, Cisco demonstrated how its Unified Computing System (UCS) can run as one unified platform that will bring together three different technology silos (servers, storage, and networks), allowing organizations to lower operational cost and power utilization but more importantly, to improve overall datacenter IT management and performance.

SITUATION OVERVIEW

In the announcement, Cisco's UCS offerings highlight the coming together of servers, storage, networks, as well as infrastructure management/virtualization capabilities that help it have a much broader discussion within the datacenter. Inspired by the evolving needs of its customers, Cisco realized the need to develop an optimized IT fabric that helps provide answers to increasingly important issues around rising energy costs, shrinking space, and better management tools.

IDC's datacenter research shows that there are significant challenges today with datacenters in Asia/Pacific — most do not think they can continue for long without making changes to the design and equipment within the datacenter, which is not ideal for the new dynamic IT environment. In a recent *IDC Asia/Pacific (excluding Japan) Multi Client Study Survey*, 39% of respondents mentioned that they have concerns about the future operations of their datacenters, while 35% stated that their datacenter facilities are aging, and 31% are concerned that there would be insufficient floor space in the near future.

Cisco's UCS is a step by the vendor in treating the datacenter as a system and optimizing it through offerings that include integrated management software, leading fabric interconnect and extender, energy-saving blade enclosures, as well as unified fabric and scalable virtual adapter. Cisco has understandably used its networking prowess to its advantage by building more intelligence and unification of capabilities on network devices to enable a more dynamic environment where compute resources are mobile and the network policies can follow the movement. The key benefit of UCS is the reduction of operation costs via simplifying management, reducing complexity, and improving utilization, Cisco outlines its UCS value proposition as follows:

- **Consolidated datacenter infrastructure.** Cisco has endeavored to simplify the networking overheads on a blade enclosure by consolidating them using unified fabric. This should result in reduced infrastructure, complexity, better airflow, and lower power consumption. It has also shifted the basic management features to the network, therefore freeing resources on the server to deal with more pressing compute needs. Most importantly, this handles the management of both the physical and virtual servers more efficiently and effectively.
- **Unified management model.** Cisco has built a consolidated management module that will manage all servers connected to the UCS Interconnects as one, highly available, management domain. The management model is also designed to have network, storage, and server administrators work more closely together in a more efficient environment. According to Cisco, the USC manager will help establish a complete service profile for an application, including the storage, compute, and connectivity needs. This can be used to automate provisioning for new services, as well as build better turnaround and scale. Furthermore, services can be moved through the network across physical and virtual states. Last, Cisco has built the management tool such that it can integrate into industry-standard management software from mainstream vendors.
- **Optimization for virtualization.** Cisco is bringing a unique value proposition of a synergistic virtualization across memory, CPU, and I/O. Part of the plan is to bypass the hypervisor and manage VMs directly from the network, resulting in lower latency and improved provisioning when such technology is available in hypervisors. There is a vast ecosystem of partners backing this strategy, the details of which are expected in the next few months.

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FUTURE OUTLOOK

While this might be tantamount to a groundbreaking solution, the road to success is not guaranteed and there may be repercussions elsewhere. Below are some of the points that IDC believes will be interesting developments to watch for in the next 12 months:

- **The datacenter networking battle will intensify.** IDC believes that datacenters provide the single largest opportunity from a networking perspective, with the total addressable market in Asia/Pacific (excluding Japan) or APEJ estimated to be at US$2.0 billion in 2009. This explains why networking vendors have launched full-frontal attacks on this key market with numerous initiatives and strategies. Juniper has partnered with IBM in Project Stratus, a converged datacenter fabric, while HP is expected to link its blade server more closely with its Procurve switch. Smaller networking players like 3Com, Brocade Foundry, and F5 Networks have also announced that they are looking into sharpening their datacenter strategies and not miss out on this parade. With the cost of managing datacenters exploding, organizations are on the lookout for solutions that will enable them to put a brake on escalating cost and some of the messaging above from UCS and Stratus on cost reduction and power efficiency will catch the attention of many organizations. How would this play out? IDC believes that datacenters will be ground zero for networking vendors and will represent the biggest prize.

- **Relationships will matter.** In an industry where relationships matter, Cisco's new initiative will put a strain on some of its existing long-term partnerships in the industry. In the region, server stalwarts HP and IBM have been close and strategic Cisco's partners for almost its entire portfolio of products would initially most likely not be part of the UCS partner ecosystem. Both relationships, which have played a large part in Cisco's success in the region, would be tested, and irrevocable damage could result from this aggressive move from Cisco into HP and IBM's turf. In the region, IBM has already made its intention known that it will be reducing its reliance on Cisco (UC/IPT) and is looking for alternative solutions. HP, which has kept its networking arm, Procurve, at arm's length in the past, has now brought it into its TSG group, which consists of both its storage and server division. The question remains: will this result in open warfare among these three 800-pound IT gorillas, and what will the repercussions be for Cisco, will it possibly make enemies of long-term friends? While there is no doubt that all three players will now be directly competing against one another, they would have to tread carefully as well, and pay attention to what their customers want, especially if organizations will still insist on having Cisco networking and telephony products. In addition, can Cisco find a winning formula for UCS without IBM and HP? However, having said that, the Cisco extensive and comprehensive channel ecosystem does deliver a wide variety of skill sets in the IT space including datacenter expertise.

- **Success will not be guaranteed.** With two of the big IT vendors being ruled out as possible initial UCS partners, Cisco would have to recruit and train partners for this initiative. This will not be an easy endeavor, given the complexity of the platform that brings together technologies in storage, servers, and networking. Channels would be required to have deep expertise and experience in all three technologies, and Cisco should enable its partners to bring these silo skill sets together into one single entity. The challenge for Cisco in the region should not be underestimated, given that there is not a very deep pool of IT services companies with that broad array of skills, and even fewer with a regional reach. Cisco has identified six initial partners, both global and regional for UCS, which are: TCS, Wipro India, ECCOM China, Singtel Optus Alphawest, Datacraft Asia, and Dimension Data Australia. IDC believes that given the limited options, Cisco should also consider marketing UCS directly, especially in the initial stages, when targeting larger accounts is essential. While a direct sales approach might be a somewhat novel concept to Cisco, given its extensive channel reach, an "in-house" groomed sales team could be up and running much quickly, giving it early momentum. Another good point is that Cisco would not damage any existing channel relationships by doing this, given the small pool of channels it could recruit from. However, in the longer term, Cisco would probably need to find a way to work with both HP and IBM on UCS, since multinational corporations (MNCs) inevitably turn to these two for much of their datacenter needs, and they would inevitably ask for a UCS solution if early momentum generates good publicity and market penetration. IDC believes that MNCs will find Nexus and UCS appealing and most of them are strong Cisco-installed bases.

Cisco has thought this through well, and has come out with a holistic strategy that will help it offer datacenter solutions directly or with an IT services company. The challenge lies in the execution of this strategy:

- Customers that have already invested in a third-party infrastructure will need to be convinced to migrate to Cisco technology. It will be easier to work with customers that are building datacenters from scratch.

- Channels will be critical for Cisco in order to take this past the larger named accounts and into the larger market. This will require training and qualification, as well as maintaining balance with existing channels, such that they are not threatened and yet effectively qualified.

- Cisco's sales force will be another challenge, as they need to think differently while having conversations around datacenter transformation. The network-focused vision will have to be broadened to address issues around compute and storage needs.

IDC views UCS as a possible game changer, a bold and audacious move by Cisco that could possibly lead it into dominating the entire datacenter market, and not just the networking portion. It would be interesting to see the kind of partnerships and new alliances that could be formed in the next 24 months, as well as the existing strong relationships that could wither, and the possibilities of mergers that could open up.

Cisco Blade Server with Integrated BMC Management Shakes up Market

Abstract

The earth is shaking under the feet of big blade server vendors as cash-rich and market-savvy Cisco rumbles onto the scene with its "Unified Computing System" (UCS), an innovative technology that combines networking, computing, virtualization, and device management into a space-saving blade chassis.

To manage the UCS, Cisco's integration of BMC's BladeLogic solutions shows a deep and well-planned partnership with BMC. This partnership lends credibility to the UCS blade offering and offers the synergy of complimentary datacenter penetration.

The Cisco/BMC offering comes at a time when the recession is creating a large inventory of surplus servers as companies contract or go out of business. As a result, server revenues are declining for all major vendors. Despite the bad timing, Cisco, with its renowned marketing, pervasive datacenter penetration, and almost $30 billion in cash, seems poised to grab a share of the blade server market. BMC brings BladeLogic to this partnership but gains leverage from Cisco's Fortune 1000 presence, thereby countering the long-held advantage that rivals IBM and HP held as vendors of both hardware and management software.

The Cisco/BMC offering comes at a time when the recession is creating a large inventory of surplus servers as companies contract or go out of business.

BMC to Manage New Cisco Blades

On March 16, 2009, Cisco launched the "Unified Computing System" (UCS), a blade system that combines computing resources and a switched fabric into a flexible solution. To manage this hardware offering, Cisco has teamed with BMC Software by bundling BladeLogic management software into the UCS solution. The BMC partnership enables image management, automated provisioning, policy management, and integration with a broad and deep set of BMC service management products.

This combination of hardware and management software clearly targets Cisco's traditional partners HP, IBM, Sun, Dell, and Fujitsu with intriguing implications for the future of the blade and network landscape.

UCS initially supports Windows Server (2003 R2 & 2008), Red Had RHEL 5.3, and Novell SLES 11. Additionally, database workloads targeted at launch include Oracle and SQL Server. There is extensive integration with VMware and Microsoft's Hyper-V while support is planned for Red Hat KVM, Oracle OVM, and Citrix XenServer. For blade connectivity for Ethernet and Storage traffic, UCS offers two converged network adapters (CNA's) from Emulex and QLogic plus Intel's 10 GbE adapter. Cisco will also offer its own virtualized adapter. Cisco also certifies EMC and NetApp storage with plans for HDS, IBM, HP, and Sun.

UCS comes on the heels of a series of enabling Cisco product introductions, including the Nexus 2000 Fabric Extender, Nexus 1000v VN-Link, and the Nexus 5000 Unified Fabric. Together with UCS, these products create a simplified and adaptive network inside and outside the blade chassis.

Context

Founded in 1980, BMC Software is one of the "Big Four" Business Service Management (BSM) vendors ($1.86 billion in 2008 revenue) and a leader in systems management solutions such as configuration, discovery, process orchestration, performance management, provisioning, and knowledge management. Despite an impressive suite of BSM software, BMC has struggled to maintain market share against HP and IBM where hardware dominance feeds the software marketing channel. In 2008, BMC improved its competitive stance by acquiring BladeLogic, a leader in provisioning.

In routing and switching, Cisco, a company with $39.5 billion in 2008 revenue, holds a larger share of the router market than all of its competitors combined.

Cisco enters a blade server market dominated by HP (55% market share based upon revenue) and IBM. In the past year, each of these vendors has seen a decline in server revenue of 10% to 15%, though HP continues to gain ground in overall market share for blades. In the midst of intense competition, one can only assume that HP and IBM, traditional Cisco partners, have adjourned to their war rooms to map a counter-attack. To succeed in this intense blade server market, it should come as no surprise that Cisco turned to BMC to boost the credibility of its bold foray into blade computing.

Blades increase server density, reduce power consumption, and simplify cabling. Cisco's UCS takes these benefits to another level by combining, under a common management platform, the resources for networking, computing, and virtualization. With UCS, each blade server exposes a consistent presentation of network and compute resources independent of whether the workload is physical or virtualized. Communication does not have to travel outside the blade chassis but even outside, Cisco's Fabric Extenders reduce complexity.

BMC has contributed "BladeLogic for Cisco UCS" – a customized management software component that is OEMed as part of the UCS offering, *enabling automated provisioning as well as management of both policies and images*. While BladeLogic for Cisco UCS will be a standard recommended component for any UCS sale, coming as a "pre-checked box" on the configuration, it is not an absolute requirement. Cisco and BMC will join forces to sell and support the joint solution. This will provide a tremendous opportunity for BMC to gain a beachhead into many new accounts and gives the m the opportunity to up-sell those accounts to additional BMC products.

UCS, with its smaller hardware footprint (fewer switches, communication blades, management modules), promises to reduce energy consumption.

In an environment of shrinking IT budgets (63% flat or shrinking in 2009 as per EMA research[1]), energy management and automated provisioning are among the few innovations that can reduce costs without sacrificing efficiency. UCS, with its smaller hardware footprint (fewer switches, communication blades, management modules), promises to reduce energy consumption

[1] For more information on improving IT services, see the EMA Research Report, "*Data Center Automation: Delivering Fast, Efficient, and Reliable IT Services*."

Key Ramifications

Despite the unfortunate economic timing, UCS seems destined to capture a large enough share of the blade server market to cause all of its competitors considerable pain. The value proposition is compelling. Given the combined presence of BMC and Cisco in major data centers, the issue of marketing channels seems moot. EMA expects a displacement of one or more of the top five within a few years.

Cisco and BMC have several powerful messages:

- Energy Savings – The reduced hardware profile consumes less energy and requires less cooling. Though figures are not available, this advantage is unique among blade server vendors. One might expect further developments in energy management to exploit this advantage.
- Auto Provisioning – Cisco's UCS and Fabric Extenders simplify the network topology both inside and outside the blade chassis, enabling BMC's BladeLogic to more dynamically provision applications.
- Ease of Administration – With a streamlined network, reduced hardware profile, and fewer cables, administration of the data center and network requires less effort.
- Broad Third Party Integration – Through Cisco's partnership with BMC, EMC, Microsoft, Scalent, and others, UCS adopts an open profile for best-of-breed integration.

Cisco has entered direct competition with HP and IBM, two companies with strong technical leadership, effective marketing, and brilliant architectural vision. This seems certain to have repercussions for future cooperation with shock waves that might extend into the IP routing market.

EMA's Perspective

The power of the Cisco/BMC alliance, though diluted by current economic conditions, seems undeniable. Vendors typically leapfrog one another in function, performance, and capacity but UCS offers a blade server architecture that unifies computing with network switching. This type of advantage has deeper impact because, by simplifying the blade infrastructure for computing, networking, and virtualization, UCS reduces administrative effort for network administrators, server administrators, and others.

IBM and HP, with a combined $24 billion in cash but $54 billion in debt, may not respond as forcefully as one might expect in order to preserve liquidity. Cisco introduces a major product line that could reduce its overall profit margin in the near term. At first glance, this may seem poor timing given current economic turmoil. One might wonder how many IT managers are willing to introduce yet another blade system onto their data center floors. However, in some ways, the timing could not be better. Among blade center vendors, Cisco has a bigger war chest than IBM and HP combined. Cisco has strong marketing channels made more powerful by the partnership with BMC. Finally, IT management will find the UCS value proposition too attractive to ignore. If Cisco, with its history of marketing success, is willing to bet billions that UCS can win head-to-head against other blade servers, one must concede the likelihood that the blade server market is due for a shake-up.

If Cisco, with its history of marketing success, is willing to bet billions that UCS can win head-to-head against other blade servers, one must concede the likelihood that the blade server market is due for a shake-up.

BMC Software seems to be a winner in almost any scenario. As Cisco gains market share, BMC gains both revenue and the opportunity for cross-selling. Atrium CMDB and Remedy are pervasive. BMC's Atrium Orchestrator (from RealOps) is robust, scalable, and well-suited to network workflows. These and other BMC building blocks can transport companies to another level of automation for provisioning, workloads, events, and processes. EMA anticipates further collaboration between BMC and Cisco, starting with BMC's Atrium and extending to other parts of the BMC portfolio. This partnership seems more strategic than tactical.

On a more speculative note, Cisco's CEO, John Chambers, has frequently expressed concern about the company's efforts at network management. BMC, with its systems management framework solutions, would compliment Cisco's network management toolset. This partnership has intriguing prospects.

The UCS/BMC offering seems very well-suited for internal clouds and Managed Service Providers. These could provide growth opportunities even during recessions. These areas could also give BMC's BSM suite a stronger position in very complex environments where abstracted infrastructure management will be essential for future success. It is ironic that HP and IBM have such strong architectures for abstracted infrastructure management while Cisco has the blade server that might best enable those architectures to succeed. Once again, the synergy of Cisco/BMC seems strategic.

The battle for blade supremacy just got a lot more interesting.

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Competitive Intelligence Report

Cisco Unified Computing System Delivers Blades and More

Steven Schuchart
Principal Analyst, Data Center

March 17, 2009

Summary

Event Summary

March 16, 2009 – Cisco has released an evolutionary data center architecture, innovative services, and an open ecosystem of partners to help customers develop next-generation virtualized data centers. Cisco is delivering Unified Computing, an architecture that bridges the silos in the data center into one unified architecture. Cisco's Unified Computing System unites compute, network, storage access, and virtualization resources in a single system that can reduce IT infrastructure costs and complexity.

Analytical Summary

• **Current Perspective:** Positive on Cisco's announcement of the Cisco Unified Computing System, because it takes Cisco to the next level in the data center, unifying the major components of the virtualized data center into a single whole that can be managed much more sensibly. UCS is really the ultimate extension of Cisco's Data Center 3.0 strategy to unify the network layer under Ethernet. UCS will feature a new product and market for Cisco, a blade server based on Intel's upcoming "Nehalem" line of x86 server chips. This makes Cisco a direct competitor of IBM, HP, and Dell in the blade server market and shows a clear line of growth for Cisco as it tries to become the preeminent data center player.

• **Vendor Importance:** Very high to Cisco, because the Unified Computing System represents not only the culmination of the Data Center 3.0 vision, but also an entirely new way for customers to consider Cisco in the data center. With blade server technology and a hand in the coordinated management of virtual servers, Cisco has positioned itself to gain mind and market share on a level with IBM, HP, and Dell. Cisco is making it clear that it is the master of the entire data center and there is no product segment in the data center in which it will not compete.

• **Market Impact:** Very high on the data center market, both on the compute side and on the networking side, because Cisco's entry into the general x86 computing market with a new line of blade servers is a major market incursion against IBM, HP, and Dell, as well as other smaller x86 blade server vendors. Cisco does not have a full line of x86 servers, only its blade

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server line, but with the virtualization and management focus Cisco is giving the product, it will make an impact on competitors. There will certainly still be "coopitition" between Cisco and the Big Three server vendors, but it is clear that there is a new fight centered around who can offer the most seamless and fluid virtualized data centers.

Perspective

Current Perspective: Positive

We are taking a positive stance on Cisco's release of the Cisco Unified Computing System, because the UCS represents positive growth at Cisco and entry into a new market, namely x86 blade servers. Cisco's strategy is to show strong integration between the network, storage, virtual machine, and x86 machine hardware to create a strong and cohesive whole. Cisco has partnered with VMware and Microsoft for server virtualization, showing that its investment in VMware has not blinded the company to other server virtualization vendors. The Cisco Unified Computing System unifies the networks on the back end, ultimately simplifying networking. Cisco is characterizing this converged and optimized system as a new category of x86 computing wholly different from products sold by HP, IBM, and Dell. The reality of the situation is that Cisco has done quite a bit to differentiate its offering, but it none the less still competes directly with the blade server offerings from IBM, HP, and Dell. Expect these competitors to all react very strongly to the hyper-competitive Cisco Systems entering their chosen markets. That said, do not expect these companies to abandon completely the partnerships they have with Cisco. For companies this large, there is always a certain amount of "coopitition".

Cisco is unveiling the strategy for its grand vision of data center unification with the Cisco Unified Computing System. Cisco has based this data center approach on industry open standards. The UCS brings together all common data center resources such as compute power, storage access, and networking into a unified whole that can be managed as a single system rather than as individual resources. The star of this particular constellation of Cisco's is its release of a blade server system based on Intel's upcoming Nehalem line of server processors. The Cisco UCS B-Series blades bring Cisco into the general x86 computing market, a significant step for the normally network-centric Cisco. More hardware specific details about the B-Series blades will be forthcoming after the launch of the Nehalem processor by Intel. Cisco has also brought on a considerable number of partners for this release including BMC, Accenture, EMC, Microsoft, Red Hat, and VMware. General availability for the Cisco Unified Computing System will be starting in CY Q2 2009. Pricing was not available at the time of this release.

Cisco is delivering on its vision for the Data Center 3.0 architecture with the release of the Unified Computing System that provides not only storage, compute, and networking hardware, but also the software to tie the systems together into a seamless whole. The UCS is aimed at the largest data centers with the intent of reducing trenchant problems such as server agility, power consumption, scalability, and complexity. Cisco's UCS will save customers space and energy as well as capital and operational expenses, up to 20 and 30%, respectively, according to the company. Cisco has realized that it cannot go it alone and the company has also realized that it cannot base its systems on VMware alone. Microsoft, Red Hat (in a later release), and VMware bring strong virtualization options for the UCS. By entering the blade market at this point, Cisco has had the advantage of observing all of the trials and tribulations of other competitors since that market's inception. Due to this later incursion into the market, Cisco was free to design its B-Series blades from the ground up,

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with no legacy conventions or methodology to tie them down. This has given Cisco a good short-term advantage in how deeply integrated its systems are. The Unified Computing System will also have appeal in other markets besides the enterprise data center. Service providers and cloud service providers will both be able to take advantage of UCS in order to provide more flexibility and, of course, massive scale. Service providers that are heavily invested in other systems may not bite right away, but Cisco has provided strong metrics that should make the UCS appealing. There has been some rather hysterical scenarios being pushed that, with the Unified Computing System, other vendors such as IBM, HP, Dell, and Sun would immediately declare all-out war on Cisco and stop any prior collaborations and any cross-reselling agreements. The emergence of Cisco in the x86 blade server market will certainly make things more tense between these competitors, but in the end, it will not be the all-out war scenario some have predicted. Companies that compete in the high-end enterprise data center all realize that some level of "coopitition" is going to occur.

One of Cisco's big disadvantages is that it has no prior experience designing and building generalized x86 servers. While Cisco's engineering teams are certainly equal to the challenge, there may be a confidence gap with customers. This lack of experience in the x86 market also extends elsewhere. Customers will ask not only about preparedness in Cisco's call centers, but also preparedness amongst its field force, in particular in its VAR partners. Cisco is heading into a highly competitive market dominated by companies that in some cases have decades more experience than it in x86 and other platforms. The market for blade servers is highly competitive, with Hewlett-Packard, IBM, Sun, and Dell all putting forth strong blade server systems. Even Cisco's own VARs are likely to be affiliated with one of these companies for blade server systems. It will be extremely difficult for Cisco to displace these companies in customer data centers; many companies simply have too much invested in their current blade server partner. Cisco has been emphatic that it is not jumping into the blade server market, but rather putting out a complete offering that integrates networking, storage, and compute into a single manageable ecosystem. That description of the Unified Computing System may be technically accurate, but at the heart of this system is a new blade server product. Cisco can protest that it is not entering the blade server market, but neither its competitors nor its customers believe it. The reaction will be the same as if they had come right out and announced competition in the blade server market. Cisco has a reputation as a high-cost vendor. Cisco is going to have to break that perception in the blade server market in order to get consideration. Customers will forgive some price disparity if they can save it on management or energy, but prices cannot be too far out of line with HP and IBM in particular. Cisco has not yet released pricing for the B-Series blades and this fuels speculation that the product will be premium-priced. Cisco's UCS is certainly a great starting point for Cisco to enter the blade server market, but ultimately there will be some issues, because Cisco is not a complete provider of x86 hardware. Even companies that are committed to blade servers still need a number of standard rack mount units or smaller blade servers for satellite offices and Cisco simply is not yet in the position to be able to fulfill these needs. Cisco has most of the pieces of the puzzle for data center managers, but it still lacks some critical systems, such as a full line of x86 servers and any storage offerings beyond the networking piece. Cisco has made a lot of money on being the single neck to choke for all networking needs, but it has a ways to go yet in the data center to match the total capabilities of a company such as Hewlett-Packard.

The Cisco Unified Computing System certainly has shaken the market up and it will be one of the biggest events in the data center market this year. Cisco has moved into the x86 blade server market and this will change how the vendors in that space compete, including IBM, HP, Dell, and Sun. The initial impact will be smaller than the news hype suggests. This is not to say that Cisco will not have a monetary impact with the UCS, but with the selling

cycle as long as it is for high-end gear such as UCS, it will take some time to see the sales impact. Cisco has taken an important step to become a more complete player in the data center market and the impact of this decision will be with us for a while.

Positives and Concerns

Competitive Positives

• Cisco is delivering on its vision for the Data Center 3.0 architecture with the release of the Unified Computing System that provides not only storage, compute, and networking hardware, but also the software to tie the systems together into a seamless whole. The UCS at this point is aimed at the largest data centers with the thorniest of virtualization problems to solve, namely agility, power consumption, scalability, and complexity.

• By entering the x86 blade server market, it is not too much of a stretch to say that Cisco has changed the face of who it is and how it will be perceived by customers. Cisco is showing its ability to compete in any enterprise market and it is showing how it can change and take the bold chances it needs to take in order to keep the company on the forefront of the enterprise IT mind and grow the company. Many companies that reach Cisco's size become hide-bound and unable to break away from their core product lines. Customers will ask themselves; do we wish to align ourselves with a company that can plan ahead and change or one that has been repeating past successes for years?

• Cisco's Data Center 3.0 and Unified Computing Systems clearly show that Cisco has been examining multiple data center pain points as well as the having its eye on the utopia of the utility data center. Cisco's UCS will save customers space and energy as well as capital and operational expenses, up to 20 and 30%, respectively, according to Cisco.

• The Unified Computing System will also have appeal in other markets besides the enterprise data center. Service providers and cloud service providers will both be able to take advantage of UCS in order to provide more flexibility and of course massive scale. Service providers that are heavily invested in other systems may not bite right away, but Cisco has provided strong metrics that should make the UCS appealing.

• Cisco has brought in a number of different partners for the Unified Computing System, including BMC, Accenture, EMC, Microsoft, Red Hat, and VMware. Cisco has realized that it cannot go it alone and the company has also realized that it cannot base its systems on VMware alone. From a virtualization perspective, Microsoft and Red Hat (in a later release) bring virtualization options different from VMware and show that Cisco is willing to provide whatever customers want regardless of its investment in VMware.

• There have been some rather hysterical scenarios being pushed that, with the Unified Computing System, other vendors such as IBM, HP, Dell, and Sun would immediately declare all-out war on Cisco and stop any prior collaborations and any cross-reselling agreements. The emergence of Cisco in the x86 blade server market will certainly make things more tense between these competitors, but in the end, it will not be the all-out war scenario some have predicted. Companies that compete in the high-end enterprise data center all realize that some level of "coopitition" is going to occur.

Competitive Concerns

• Cisco Systems has no prior experience building and maintaining generalized compute

servers. While Cisco's engineering teams are certainly equal to the challenge, there may be a confidence gap with customers. Customers will ask not only about preparedness in Cisco's call centers, but also preparedness amongst its field force, in particular in its VAR partners.

• Cisco is heading into a highly competitive market dominated by companies that in some cases have decades more experience than it in compute platforms. The market for blade servers is highly competitive, with Hewlett-Packard, IBM, Sun, and Dell all putting forth strong blade server systems. Even Cisco's own VARs are likely to be affiliated with one of these companies for blade server systems. It will be extremely difficult for Cisco to displace these companies in customer data centers; many companies simply have too much invested in their current blade server partner.

• Cisco has been emphatic that it is not jumping into the blade server market, but rather putting out a complete offering that integrates networking, storage, and compute into a single manageable ecosystem. That description of the Unified Computing System may be technically accurate, but at the heart of this system is a new blade server product. Cisco can protest that it is not entering the blade server market, but neither its competitors nor its customers believe it. The reaction will be the same as if they had come right out and announced competition in the blade server market.

• Cisco is going to suffer from a common Cisco malady in the blade server market and that is a reputation as a high-cost vendor. Cisco is going to have to break that perception in the blade server market in order to get consideration. Customers will forgive some price disparity if they can save it on management or energy, but prices cannot be too far out of line with HP and IBM in particular. Cisco has not yet released pricing for the B-Series blades and this fuels speculation that the product will be premium priced.

• Cisco's UCS is certainly a great starting point for the company to enter the blade server market, but ultimately there will be some issues, because Cisco is not a complete provider of x86 hardware. Even companies that are committed to blade servers still need a number of standard rack mount units or smaller blade servers for satellite offices and Cisco simply is not yet in the position to be able to fulfill these needs.

• Cisco has most of the pieces of the puzzle for data center managers, but it still lacks some critical systems, such as a full line of x86 servers and any storage offerings beyond the networking piece. Cisco has made a lot of money on being the single neck to choke for all networking needs, but it has a ways to go yet in the data center to match the total capabilities of a company such as Hewlett-Packard.

Recommended Actions

Recommended Vendor Actions

• Cisco will need to trumpet all the customer wins it gets with the Cisco Unified Computing System in order to build momentum for the product. Cisco certainly has the contacts with nearly every large enterprise, and it should use those contacts to at least get evaluations of the UCS. Strong evaluations and Cisco's willingness to provide units for evaluation will be a big help in sales.

• Cisco will ultimately need to share its roadmap for x86 blades as well as other form factors with customers that commit to the UCS. Cisco will also need to give hints to the rest of the world, which may be interested in its server products. At the end of the day, to be a complete server vendor, Cisco will need to present a much more varied server product line.

• Cisco should continue to expand its relationships with server virtualization software vendors, most notably Citrix and Oracle. Cisco has gotten a nice start with its relationship with VMware, Microsoft, and Red Hat, but there is no reason not to include other possible partners in future releases. The more flexibility that Cisco can give with the UCS the better.

• Cisco will need to embark on a grand plan to educate all of its partners and customers about UCS. This will serve a couple of purposes. First, it will get the word out. Second, it will reassure customers that Cisco will stick to its guns in the x86 blade server market. Cisco put considerable engineering effort into the B-Series blades and it is unlikely that it will give up on the products or the concept of the UCS easily. Still, tales of Cisco's engineering on the product can do nothing but increase confidence.

• Cisco will need to persevere as competitors immediately jump on its products and plans. Cisco is known as a fierce competitor and the incumbents in the x86 blade server market are going to go after Cisco as strongly as they can. It will take some time for the market to settle down and, at the end of the day, all of the publicity will help keep Cisco's UCS in the mind of enterprise buyers.

Recommended Competitor Actions

• Hewlett-Packard is probably in the most direct line of competition with Cisco. HP has been competing with Cisco in networking for some time. Hewlett-Packard should go on the immediate offensive with Cisco after the Nehalem announcement, showing comparisons and playing up its own partnerships with VMware and Microsoft. In addition, HP should point out to customers its storage and storage management software offerings. HP should also continue to tout the ease-of=use capabilities that it emphasizes across its entire data center product line.

• IBM has already taken the first step by increasing its partnerships with Juniper for networking. IBM should use its long history in virtualization and in the data center as weapons against Cisco in the blade server market. IBM should tout its bladeserver.org standards organization and its commitment to open source software as reasons for customers to stick with the organization. IBM also has extremely strong storage and storage management software offerings that it can offer customers where Cisco cannot or must partner.

• Dell needs to continue with what it is best at, and that is competing on price in the blade server market. Cisco has a reputation for high-priced goods and services and Dell can take advantage of that. It will be particularly effective considering the weakness in the current economy and the general decline in IT budgets.

• Sun Microsystems will first need to reassure customers of its own financial stability in a weakening economy while showing customers the high level of engineering and reliability that Sun's own blade server offerings enjoy. Sun should also use its strong position in open source software and the Solaris operating system as a strong differentiator. Sun also has a strong storage and archiving division that it can use to show that its offerings are more complete than Cisco's.

Recommended End User / Customer Actions

• Customers should keep an eye on what Cisco is doing with Unified Computing System, but no real action is necessary until the Nehalem processor ships from Intel. When that happens, Cisco will have pricing, competitors will have Nehalem products to compete, and

companies can consider evaluation units.

• Customers that are all-Cisco shops and heavily invested in virtualization should take a look at the Cisco Unified Computing System. A long and in-depth evaluation of the product should be undertaken, as well as a discussion of what to do for general rack-mount servers. Many companies will think twice about a two-vendor solution for data center servers.

• Data center managers who use blade servers from other manufactures such as IBM, HP, Dell, and Sun should inquire with their incumbent vendor about how their capabilities match up to those on the new Cisco blade servers and the Unified Computing System in general.

• Customers in the small and medium data center market should keep an eye on Cisco's Unified Computing System, but know that the product is really designed for the large data center customer. That does not preclude Cisco from scaling down the products and concepts behind it for use in smaller data centers, but it does leave them out for now.

Focus Report

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Cisco's UCS Addresses One of the Key Anywhere IT Dependencies

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The Bottom Line:	One of the key dependencies in evolving to Anywhere IT is being able to orchestrate virtual data center resources as they move across the corporate network. Cisco's UCS solution addresses this key dependency by linking data center compute and storage infrastructure to network infrastructure. This promises to reshape the vendor landscape over the next five years.

Cisco Launches Its Long-Awaited Unified Computing System

On Monday, March 16, Cisco announced its highly anticipated Unified Computing System (UCS), the product formerly known as California. Cisco's UCS product combines compute, storage access and network infrastructure and addresses one of the key dependencies that must be overcome to fulfill the Yankee Group vision of Anywhere IT—the challenge of orchestrating the management of data center resources to enable the movement of virtualized IT resources (for more information, see February 2009 Yankee Group Report "Introducing Anywhere IT"). Cisco's UCS solution includes network switching, blade servers and management software to specifically deal with this issue. This product release also signals Cisco's entry into the blade server market, but contrary to much of the media attention prior to March 16, UCS is not designed to compete specifically for general-purpose blade server business. UCS is designed for use in environments where the enterprise wants to either mobilize virtual workloads or better support large data sets in nonvirtualized environments.

UCS can also be applied to the infrastructure policies needed to deploy applications—such as server identity, firmware, and Ethernet and storage networking. These policies are encapsulated into a construct called a service profile, which can be provisioned onto any blade in the environment. When the service profile is moved from one blade to another, all policies and identities follow. This both compliments a virtual environment and brings mobility to a physical environment.

Ultimately, UCS will enable companies to run more virtual machines for more applications. This concept is also important for the evolution of cloud computing, where pieces of infrastructure will be orchestrated with other pieces in different locations to deliver an application to an end user.

UCS Will Accelerate the Reshaping of the Vendor Landscape

The release of UCS follows last month's video blog by Cisco CTO Padmasaree Warrior, in which she outlined the company's unified computing vision. The vision, similar to the fundamental concepts of Anywhere IT, calls for the coming together of the compute, storage access and network environments that power IT. Historically, these areas have been managed in very discrete silos, with each having its own set of vendors, management tools and IT skills required to run that part of the data center. However, virtualization has forever changed IT and created demands on both computing, storage access and networking that can no longer be met with traditional IT infrastructure or management principles.

The concept of unified computing and Cisco's subsequent UCS solution release will accelerate the reshaping of the vendor landscape, which will result from the tight coupling between networking and computing. Over the past year there have been other, smaller events that have foreshadowed this trend:

- Best-of-breed storage networking vendor Brocade acquired high-end Ethernet networking vendor Foundry, moving Brocade into data networking.

- Storage fabric silicon vendor Mellanox Technologies released a converged InfiniBand, Ethernet and fiber channel gateway, which signaled its entry into Ethernet.
- Juniper announced its "Stratus" vision, which indicated Juniper's interest in computing, although the company highlighted that the vision will be filled through partnership.

However, none of these announcements will have near the impact that Cisco's will. UCS puts Cisco squarely in competition with the traditional server vendors, some of which have been longtime Cisco partners and channels. Simultaneously, computing vendor HP has been restructuring itself to make the networking division, Procurve, a more strategic part of its go-to-market strategy, and IBM has quietly been aligning itself with Cisco competitors Juniper, 3Com and Foundry.

Unified Computing Will Create a Wave of Acquisition Activity in the Data Center

All of these events, highlighted by Cisco's launch, will turn partners into competitors, create new partnership opportunities and kill off companies unable to make this transition, reshaping the data center vendor landscape. Long term, the fusion of computing and networking will allow organizations to have ultimate flexibility in how IT departments want to deploy, manage, support and deliver applications to end users. Organizations will also be able to buy the exact amount of any particular resource required to run the organization. Organizations will no longer have a number of tightly integrated but siloed sets of infrastructure that are provisioned for peak usage, meaning most infrastructure is highly underutilized the majority of the time.

The full virtualization of the data center and related shift to cloud computing will create a wave of upgrades to data center infrastructure that has been specifically built for virtual environments, creating opportunity for new vendors to emerge as market leaders and causing some market leaders to fade or even disappear. This is similar to the transition that occurred when companies were building out Internet infrastructure. Many of the incumbent vendors did not see that transition occurring and suffered the consequences. Huge companies, such as Cabletron and Digital Equipment Corp, were casualties of that last transition. The transition to the virtualized data center will have a similar impact. We also expect to see organizations building fewer but much larger data centers, creating a battle for data center market share that will fuel rapid vendor consolidation. IBM is expected to buy SUN, and companies such as Rackable, Mellanox, QLogic and Voltaire will become acquisition targets for larger vendors such as IBM, HP and Cisco as they look to broaden their data center footprints.

Vendor Winners/Losers

- **Virtualization vendors VMWare, Microsoft and Citrix are the big winners.** UCS enables more organizations to utilize virtualization technology for more applications, including many real-time and mission-critical applications. This will expand the market to at least three times its current size during the next five years, and IT departments will make virtualization a strategic initiative.
- **Cisco will be a winner.** Cisco's move into computing has been met with skepticism in much of the industry chatter leading up to its launch. This is similar to Cisco's move into the telephony industry, when the market transitioned to voice over IP. Cisco built its own vertically integrated system and gained a significant early mover advantage that it still has on most of the industry.
- **HP will also be a winner.** Similar to Cisco, HP has all the components to build its own UCS-like product. The rumor is that HP has a current internal project with the codename "Trilogy" that is an all-HP version of Cisco's UCS to be released later this year. Although they won't be first to market, HP will leverage its huge channel to create its own opportunity.
- **Brocade/Foundry will be a winner.** The combined organization has arguably the best technology in both storage networking and data networking, although it has yet to articulate what its vision is and how Brocade fits into it. It has a window of opportunity, but it needs to establish its role in this transforming market soon.
- **Data network pure-play companies, such as Extreme and Nortel, will be losers.** The dependency that virtualization is creating on the network does not leave room in the market for pure data networking vendors. 3Com is a dark horse in this market, as it has a rapidly growing product line and its "China out" strategy may allow it to reinvent itself and take advantage of this wave.
- **Many of the niche data center vendors will either be acquired or end up losers.** There is a window of opportunity for the niche data center vendors to align themselves with larger vendors' visions, but those that lag will struggle to survive.

Conclusions

This announcement and product release from Cisco further demonstrates how tightly linked computing and networking have become. It also further exemplifies how the competitive landscape in the data center is shifting. Partners will become more competitive and new partnerships and alliances will be created. Data center vendors will need to define their vision of the virtualized data center, determine what role to play and quickly establish new partnerships, acquire companies or develop new products.

Recommendations for Cisco

Unified computing is a significant trend and presents an opportunity for Cisco to move into an adjacent market that has the potential to "move the needle" on Cisco revenues. Many of the other markets Cisco has moved into lately would have significant impact to Cisco, even if it owned the entire market. A small piece of the unified computing market could result in net revenue growth of several billion dollars during the next few years. To capitalize on this Cisco must:

- **Put together two to three lighthouse account wins to kick start the industry.** Cisco used Dow Chemical, Bank of American and Lehman Brothers as early VoIP victories, which propelled them into the VoIP market as a legitimate voice vendor. Similar wins will be needed to legitimize Cisco as a computing vendor. This will also help legitimize the overall market. Although there are smaller vendors, such as Liquid Computing, that have product available today, those companies are too small to create any kind of buyer awareness of this market.
- **Work with CIOs and CFOs to develop a way to budget for unified computing by building an ROI case with less than a 12-month payback.** During the Q&A portion of the March 16 event, Cisco Senior Vice President Rob Lloyd answered a Yankee Group question on where the budget for unified computing sits. Lloyd gave a very honest but curious answer, admitting that the budget for this type of product does not live with Cisco's traditional network buyer but instead "sits in the cracks of the IT silos." Money that sits between cracks can be hard to procure, requiring a strong business case.
- **Shift corporate alliances away from most notably HP, and to a lesser extent IBM, to storage and application vendors.** Although this announcement focused heavily on tying network and computing resources together, storage and application mobility does need to become part of unified computing as well. Ultimately, unified computing will enable companies to deliver any application to any end point over any network requiring the full IT stack to be mobilized.
- **Develop a series of services and certifications around unified computing.** It is highly unlikely that most of Cisco's channel partners understand how to deliver unified computing. Cisco will need to create a series of professional and managed services that can be leveraged or white labeled by its partners to deliver unified computing. These services need to encompass the full lifecycle of data center management. Cisco also needs to extend its certification programs to include computing-related skills to help its huge base of Cisco-certified engineers to capitalize on this.

Recommendations for Competitors

- **HP needs to respond to Cisco with how an all-HP data center will look.** As we mentioned earlier, industry rumor is that HP has a project codenamed Trilogy that should address HP's competitive response. The oncoming battle between Cisco and HP was started by HP last year when executives from the Procurve division brashly began speaking publicly about their goal of Cisco share gain in the network switching industry. HP threw down the gauntlet, and now must build out its larger data center vision to compete in this duel.
- **Storage networking specialist Brocade needs to lay out its own vision for unified computing.** Much of the early focus of network specialist Foundry has been around sales leverage. This was the correct, short-term item to focus on, but clearly the combined Brocade/Foundry has a tremendous amount of upside if unified computing gains traction. Although it's unlikely Brocade will build its own servers or storage devices, it can provide the connectivity fabric for the vendors that do. Brocade/Foundry should be the centerpiece of an open, standards-based version of Cisco's UCS.

- **Juniper needs to develop some proof points and details around its "Stratus" initiative.** At its analyst conference earlier this year, Juniper showcased Stratus, its vision of a cloud-oriented world where a high-performance network was needed to connect the computing clouds created through partnership. However, the company gave no details on partners or product, leaving many questions that need to be answered before Juniper can be taken as a credible next-generation data center vendor.
- **IBM should create an open, unified computing consortium made up of itself and other vendors such as Brocade, Juniper, Force10, Rackable, F5 and others that live at specific points in the data center.** IBM should then leverage its huge professional services organization to deliver a multi-vendor vision of unified computing.

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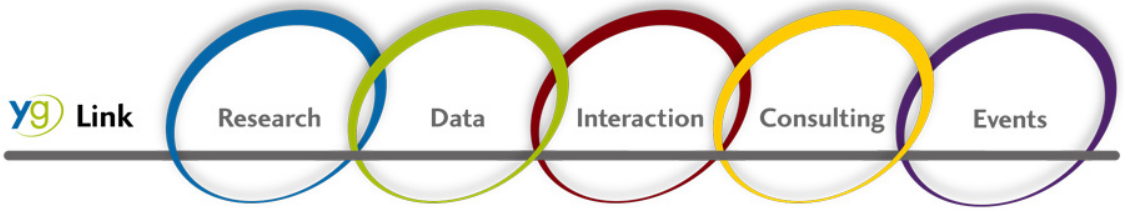

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Cisco's Big Blade Server Bet

Cisco Moves To Become A Complete IT Infrastructure Supplier

by Galen Schreck and James Staten
with Simon Yates and Rachel A. Dines

EXECUTIVE SUMMARY

After months of rumors, Cisco officially entered the server business with a modular system it calls the "Unified Computing System." This blade server system goes one step beyond its predecessors by starting from a unified network foundation on 10 gigabit per second Ethernet (10 GbE) that delivers a true wire-once architecture. The incumbents in the server market quickly responded by denouncing and discounting this move. But, to quote Shakespeare's Hamlet, "the cat will mew but the dog will have his day." Forrester believes Cisco's move was inevitable. Virtualization is causing the convergence of server, storage, and network platforms. This is not driven solely by the quest for a greater share of the enterprise wallet. Virtualization and virtualized I/O in particular have given Cisco a legitimate reason to build integrated server and networking solutions.

CISCO IS NOW OFFICIALLY A SERVER VENDOR

Cisco is now in the server business. Its first product — the Unified Computing System (UCS) — is essentially a blade server system that is integrated with Cisco's 10 GbE networking and virtualized I/O capabilities. But the Cisco UCS is somewhat different from existing servers in the following ways:

- **Virtualized I/O.** Probably the most notable thing about the Cisco UCS is how it handles I/O. Traditional servers have multiple I/O adapters for their Ethernet and Fibre Channel (FC) SAN connections, which creates a lot of expense and complexity to manage. Blade systems add internal Ethernet and Fibre Channel switches for aggregating these connections. The Cisco UCS consolidates all these components by putting 10 GbE interfaces on the server blades and passing them straight through the chassis via passthrough modules. The adapters are then configured by the UCS manager to appear to the operating system as virtual Ethernet, iSCSI, or Fibre Channel over Ethernet (FCoE) adapters.[1]

- **Integrated fabric, adapter, and hardware management.** The Cisco UCS is operated from the UCS Manager, which is integrated with a fabric interconnect. The UCS Manager controls the configuration of up to 320 blades and 40 chassis and how they connect to the outside world through a common interconnect. The interconnect aggregates traffic from the blades so that each rack requires a smaller number of 10 GbE interfaces to the data center.

- **High performance and density, especially for virtualized workloads.** Like competing blade systems, Cisco's compute blades will each support up to two of the latest Intel Xeon CPUs, code-named Nehalem, which provide higher performance and greater I/O and memory bandwidth per server. To this Cisco adds a proprietary memory controller that increases the number of DIMMs

per socket above Intel's specifications. It then marries this with its VN-Link technology like that found in the Nexus 1000V that will extend Cisco's networking policies directly to forthcoming VMware Virtual Infrastructure 4 environments for full visibility, control, and consistency of the network down to the virtual machine.[2] On top of this, the UCS adds hypervisor bypass technology that lets I/O flow directly between the guest virtual machine and the I/O subsystem.

- **A lot fewer components to manage, power, and cool.** Due to the UCS's unified fabric design, it contains about half the component parts of competing blade systems, fewer cables are required, and adding a straight-through air flow design should achieve higher energy efficiency than its competitors.

THAT ALL SOUNDS VERY NICE, BUT SHOULD I BUY A SERVER FROM CISCO?

Last we checked there weren't a lot of IT shops clamoring for yet another server vendor. For most server administrators, Cisco is not a vendor with which they have had direct experience. So to say that Cisco has a significant hill to climb in gaining server admins' trust is an understatement. The company also needs to build out a partner ecosystem, demonstrate its support and professional services credibility, and earn its way onto the server side of many a production data center before it will gain significant traction. But overall, we see nothing that should stop any enterprise that views Cisco as a strategic partner from seriously considering the UCS for future purchases. Our rationale is that:

- **The Cisco UCS is the shape of servers to come.** Something like the Cisco UCS is simply a logical outcome when you start designing servers with a clean sheet of paper. In an ideal setting, you can control I/O all the way from the data center switch, to the rack, chassis, physical adapter, virtual switch, and finally virtual adapter with the same command set and common policies. And as workloads move within the system, shift I/O with them at will. The closest competing solution today is HP's Virtual Connect Enterprise Manager with its Flex-10 Ethernet switches. This solution enables unified control over I/O assignments in a similar way.

- **Rethink blades and make virtual I/O a top selection criterion.** We believe blade servers — from all vendors — have been incorrectly typecast based on old perceptions. Essentially, they've been purchased mainly by firms that needed to save space and power. If you didn't have a space problem, you probably haven't seriously considered blades. Worse, yesterday's blades weren't particularly powerful — and they cost more than traditional systems. Newer, more powerful blades, coupled with server virtualization, will change the reasons companies consider blades.

  In a nutshell, the data center has become more dynamic. We want to be able to move virtualized applications around for availability or efficiency reasons, but older servers make it hard to keep track of the relationship between logical and physical resources. In addition, these servers are hard-wired with adapters and mezzanine cards that can't be reconfigured when workloads

move. The answer is a server that has no I/O personality. Everything about it can be rewired or reconfigured in software — right down to the adapters that it appears to have.

- **For new deployments, start unifying the data center and breaking down the silos.** The Cisco UCS is more of a green field technology, although it is designed to be something of a chameleon. If you want it to act like legacy infrastructure and use Fibre Channel SANs, it can. However, it is optimized for virtual workloads and starts in the 10 GbE environments that most enterprises are just beginning to deploy. It presents an opportunity to rethink a data center in which all the infrastructure resources are virtual and can be composed to the requirements of the business services. It requires a unified strategy among the server, network, and storage administrators in which the overall IT realm is consolidated for the good of the organization, rather than to protect the turf of any one silo.

WHAT IT MEANS

BLADE SERVERS WILL FIND GREATER PURPOSE IN NEXT-GEN DATA CENTERS

Modern blade systems deliver a unified infrastructure that can be more flexibly deployed, less disruptively maintained, and more cost-effectively operated than previous server designs. Their overall improvements in cable management, energy efficiency and configuration management, and migration simplicity make them a better fit for organizations that need to adapt their business services quickly. Combined with server and I/O virtualization, blade systems help enterprises rapidly deploy new services and tune and optimize the infrastructure to meet economic and quality of service (QoS) objectives.

Because of their tidy and integrated design, we think that modern blade systems are able to solve these types of challenges sooner than standalone rackable systems with separate fabrics and management tools.

There has been a lot of talk about data center shipping containers becoming the new field-replaceable unit. However, it would take many days to swap one out — because getting the right servers connected to the right resources is not trivial. But if you could simply upload a blueprint containing the complete topology of your data center to a management element like the UCS Manager or HP Virtual Connect Enterprise Manager, every blade in the container would immediately know its network identity and how to connect to its storage and network resources. That's the promise of virtual I/O and why it will matter more in the next generation data center.

SUPPLEMENTAL MATERIAL

Companies Interviewed For This Document

Cisco Systems

ENDNOTES

[1] Each UCS server outboards only Ethernet connections, but via a Cisco FC to Ethernet gateway, can be connected to FC storage systems.

[2] The Cisco 1000V, announced at VMworld in the fall of 2008, leverages a forthcoming virtual NIC framework in the VMware virtual infrastructure. Cisco's implementation of this service allows all virtual network assignments to speak Cisco NX-OS. Source: Cisco Nexus 1000V Series Switches (http://www.cisco.com/en/US/products/ps9902/index.html).

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