

New Data Center Solution Enables Flexible, Automated Service Delivery

Cisco VFrame Data Center 1.2 enables coordinated provisioning and reuse of physical and virtualized network resources from shared pools.

EXECUTIVE SUMMARY
<p>CISCO SYSTEMS, INC.</p> <ul style="list-style-type: none"> • Industry: Technology • Location: San Jose, CA • Number of Employees: 63,000+
<p>BUSINESS CHALLENGE</p> <ul style="list-style-type: none"> • Needed an agile, heterogeneous solution to deliver services for internal development teams and external businesses in a timely manner
<p>NETWORK SOLUTION</p> <ul style="list-style-type: none"> • Develop a software and appliance-based framework to rapidly deliver end-to-end server, storage, and networking services
<p>BUSINESS RESULTS</p> <ul style="list-style-type: none"> • Extreme reliability and high availability solution that automatically provisions resources as needed. • Integrates transparently with existing heterogeneous products.

Business Challenge

Cisco Systems was founded in 1984 by a small group of computer scientists from Stanford University. Today, with more than 63,000 employees worldwide, Cisco develops hardware, software, and service offerings used to create Internet solutions that make networks possible, providing easy access to information anywhere, any time. This tradition of innovation continues with industry-leading products and solutions in the company’s core development areas of routing and switching, as well as in other advanced technologies.

Cisco® IT is tasked with managing scores of technologies and services that Cisco develops and uses for internal and external purposes, including the company’s Services Oriented Data Center (SODC) strategy, an architecture designed to deliver infrastructure as a service. The goal of the SODC

strategy is to enable automated provisioning and to “orchestrate” devices and solutions in the data center to create an end-to-end service delivery model.

“Cisco already has a vast array of hardware and software solutions in the data center, and the VFrame Data Center is a natural progression to bring all of these components and solutions into a single framework for service delivery. It will be an enabler to collaboration for our teams who support these solutions, and a significant component of our overall Data Center 3.0 strategy.”

—Ken Bulkin, Senior Manager of IT, Cisco Systems

Ken Bulkin, senior manager of IT at Cisco, is an eight-year Cisco veteran who has worked in a variety of IT Data Center and Hosting Infrastructure roles. While leading the Data Center Services Business Application Hosting team in 2005, Bulkin helped build Cisco IT's first virtualization of servers in the Enterprise Data Centers. This eventually led to his current role in leading the SODC effort. According to Bulkin, the challenge of finding an agile way of delivering infrastructure was one of the first drivers that led the team to pursue the virtualization strategy.

"Cisco is no different from our industry peers in terms of capacity challenges within our data centers. The limits on capacity affect agility and the ability to deliver the necessary services for our development teams and the business to successfully leverage new IT capabilities," says Bulkin. "We struggled to get these architectures into the hands of our development community in a timely manner. From the standpoint of architecture agreement to infrastructure delivery, it was taking us up to three months for fairly simple projects."

As Bulkin and his team looked for ways to cut back the cycle time, they began exploring different solutions to virtualize and automate service delivery.

"Cisco and other networking companies have been utilizing forms of virtualization via V-LANS and V-SANS for years, but our critical challenge was agility. Virtual servers provided a necessary capability," says Bulkin. "We looked outside of Cisco for additional technologies for provisioning and orchestration, but they didn't hit the mark and in some cases were extremely expensive. The return on investment just wasn't there."

Solution

Having done their due diligence, the IT team began developing a framework around automating service delivery and began creating templates to rapidly deliver end-to-end storage and hosting services. Simultaneously, an engineering business unit was addressing this need through the development of a network-driven, service orchestration solution called VFrame Data Center. The two teams aligned to form a unique partnership. As a part of their role, IT's newly formed SODC team was able to participate in early testing and provide valuable feedback to the business unit from the development cycle to First Customer Ship. The solution enables the coordinated provisioning and reuse of physical and virtualized computing, storage, and network resources from shared pools.

VFrame devices have been deployed in what are called "pods," which are servers, storage, networking, and shared services for a particular environment. VFrame allows for multiple pods in each data center.

"We first deployed VFrame in a development pod in the data center in Research Triangle Park (North Carolina) and learned a lot from that experience" says Bulkin. "We were able to resolve many problems, which accelerated our deployment in production data centers in Mountain View, CA and a new facility in Richardson, TX. We view it as a core part of our provisioning strategy."

Bulkin believes the strategic Richardson data center has shown promise in terms of rapid deployment and utilizing VFrame with blade servers. "The Richardson data center happens to be a strategic data center. It plays an important role in our overall global data center strategy," says Bulkin. "Our ability to pre-populate the data center with hardware, including blade chassis with 12 servers a piece is obviously a big advantage to us."

Further, Bulkin says VFrame has addressed the SODC project requirement to speed up delivery. “V-Frame has also allowed us to take fairly simple, straightforward, and even complex environments and provision infrastructure in a common manner.

According to Bulkin, Cisco VFrame has elevated the team’s ability to respond differently to thresholds and events in their infrastructure. “V-Frame allows for the detection and response to certain events and thresholds. For example, if a server hardware failure occurs, VFrame will detect this and provision a replacement server from a free pool of resources to recreate the original environment in a short period of time,” says Bulkin. “Having that automated provisioning feature is a huge advantage, especially when we historically have had to page multiple on-call support staff to investigate a problem and possibly get a hardware vendor onsite to perform a replacement in order to bring up an environment and its service.”

Elevated productivity is another benefit that VFrame provides, according to Bulkin.

“V-Frame has the ability to set policies around thresholds,” says Bulkin. “If I have a finance application that is used heavily at the end of each quarter, but for the rest of the quarter the usage is fairly light, we can set up thresholds or timers to provision services temporarily into that application service. We can configure VFrame to automatically provision two servers for the final two weeks of the quarter and return them to the pool of free devices once the high usage period is over. This allows us to meet the requirements of the application, without having idle resources during low usage periods.”

Bulkin says VFrame can be a consideration for deployment in lines such as utility computing models where VFrame can help intelligently power down servers that are not needed during non-peak hours and bring in extra capacity during the peak demand times.

“Power consumption at the data center is also a tremendous issue industrywide, and we believe VFrame will help address that problem while assisting companies with green initiatives,” says Bulkin. “Our team is always looking for alternatives to power-hungry devices and new capabilities to leverage from working with our business units, to integrating tools from third-party vendors, to providing services to help us to be more environmentally responsible.”

Results

“V-Frame enables customers to gain resiliency by being able to deploy very standard, structured environments in a standardized fashion for the infrastructure,” says Bulkin. “VFrame adjusts to provide the services that are needed for each individual client.”

As the next-generation data center evolves, Bulkin and his team believe VFrame directly applies as a critical component of the data center.

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Next Steps

In terms of the next steps for the SODC project, Bulkin says that he and his team are preparing for future releases of VFrame.

“Cisco VFrame 1.2 is being launched in Cisco Live at the end of June 2008, and once it goes live in late summer, we will have an out-of-the-box template available for provisioning VMware servers,”

says Bulkin. “This next version of VFrame is where we will see its real capabilities, and we expect to gain significant benefits with V-Frame alone and with VFrame’s integration with other technologies such as VMware. Our work with VMware so far has seen tremendous overall benefits in this new way of delivery. Future releases of V-Frame will look at additional processes in the data center, allowing for more resiliencies that will allow us to be more flexible around change management without sacrificing resiliency and stability.”

Technical Implementation

Mike Matthews, program manager of IT at Cisco, sees VFrame 1.2 as more stable and flexible for actual IT use. “Cisco VFrame provides a wide range of benefits, including lower costs, better business responsiveness, and improved resilience,” says Matthews.

He identifies the following as key features in the latest release of VFrame:

- Inclusion of VMware VI support and provisioning
- SAN Storage additions that provide for more flexible SAN storage growth
- Improved import/export of Golden Image Repository (GIR) variables
- Shared Logical Unit Number (LUN) support, which allows support for clustering technologies such as Oracle RAC and Veritas.

PRODUCT LIST

Cisco Application Networking Services:

- Cisco® V-Frame Data Center

For More Information

Find out more about Cisco V-Frame Data Center, please visit <http://www.cisco.com/go/vframe>.



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