

INSIGHT

Cisco Expands Datacenter Product Line: Announces Unified Computing System

Vernon Turner	Lucinda Borovick
Matt Healey	Michelle Bailey
Abner Germanow	Joseph C. Pucciarelli
Janet Waxman	Richard L. Villars
Rebecca Segal	Tim Grieser
Mary Johnston Turner	

IDC OPINION

On March 16, Cisco announced its Unified Computing System (UCS), which is an integrated solution of compute, network, storage access, and virtualization resources that is initially targeted at the growing virtualization market. 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. Specifically, challenges around manageability, utilization, reliability, and energy efficiency are forcing customers to consider new technology approaches that change the economics of the datacenter. To date, virtualization has been at the heart of this shift; however, IDC is increasingly seeing a requirement for purpose-built systems that lower the burden of integration across server, storage, and networking organizations for multiple workloads. IDC believes that Cisco as a \$40 billion established major technology provider and a strategic supplier to the datacenter network has the credibility in the datacenter to be evaluated by customers. The company has the ability to deliver a new technology architecture that meets the complexity problems of the future virtualized datacenter. Findings include:

- ☒ Large-scale datacenters have reached an inflection point where the combination of today's physical infrastructure and the use of large-scale virtual servers is creating the need for new approaches to IT. This creates an opening for new architectures as well as new suppliers and solutions to enter the datacenter.
 - ☒ The massive scale of the architecture arising in the datacenter is creating an opportunity for the datacenter network to evolve and have an important and unprecedented role to play in datacenter management.
 - ☒ The attention being paid to the datacenter will intensify over the next several quarters and may in fact force customers to consider alternate models or investments that they may not have considered perhaps even nine months ago, leaving room for Cisco and others to deliver solutions. Cisco is taking away the pain of integration that many datacenter customers currently experience.
 - ☒ IDC expects this announcement will further spur innovation in support of the datacenter of the future. Most specifically, IDC expects HP and IBM to respond very aggressively to maintain their market share in the datacenter.
-

IN THIS INSIGHT

This IDC Insight IDC analyzes Cisco's March 16 Unified Computing System announcement.

SITUATION OVERVIEW

On March 16, 2009, Cisco announced the Unified Computing System, which unites compute and network resources in an integrated system to ease the complexities of the large datacenter. This system is built in support of Cisco's Unified Computing Architecture, which is focused on removing computing silos that have built up over the last decade within the datacenter. As a hybrid of compute and network, the Unified Computing System is aimed at reducing IT infrastructure costs and complexity as well as maximizing capital assets and improving business agility well into the future.

At the core of this announcement is the introduction of a compute and network resource that is purpose built for virtualization. Included is a very high memory footprint that can support a highly dense virtual environment as well as accelerate the adoption for applications with high I/O requirements, which have typically been outside the realm of virtualization. While the focus initially will be on virtualized workloads, the use of industry-standard components enables Cisco to address other memory and I/O intensive workloads, such as database. With integrated networking capabilities, the Unified Computing System enables customers to wire once and actually reduce the number of networking components that would be included in a standard solution today. It is an architecture that provides virtual I/O and facilitates workload mobility. Workload mobility is core to the dynamic datacenter of the future.

The announcement has the following components:

- ☒ **UCS B-Series blades.** The blades are based on the future Intel Nehalem processor families (the next-generation Intel Xeon processor). The Cisco blades offer patented enhanced memory technology to support applications with large data sets and allow significantly more virtual machines per server. Three types of compute blades are available, and customers have the ability to mix blade types within the enclosures. Up to 320 blades are supported in a maximum of 40 enclosures as part of a single Unified Computing System.
- ☒ **UCS Manager.** The UCS Manager provides a graphical user interface (GUI), a command line interface (CLI), and an application-programming interface (API) to manage all system configuration and operations. Cisco UCS Manager defines service profiles for applications and provides device management on Unified Computing System. UCS Manager is an embedded Fabric Interconnect. Customers will need one UCS Manager for each Unified Computing System.
- ☒ **Fabric Interconnect.** The Fabric Interconnect is the intelligence that provides for a unified fabric over a low-latency, lossless 10Gbps Ethernet.
- ☒ **Fabric Extender.** The Fabric Extender is logically part of the Fabric Interconnect. It inserts into the blade enclosure. This network foundation provides for Ethernet, Fibre Channel, Fibre Channel over Ethernet (FCoE), and iSCSI.

- ☒ **Storage access.** The Cisco Unified Computing System provides consolidated access to both storage area networks (SANs) and network attached storage (NAS). Support for a unified fabric means that the Unified Computing System can access storage over Ethernet, Fibre Channel, FCoE, or iSCSI. In addition, IT staff can preassign storage access policies for system connectivity to storage resources, simplifying storage connectivity and management and helping to increase IT productivity.
- ☒ **Blade enclosure.** The blade enclosure provides flexible bay configurations and is logically part of the Fabric Interconnect.
- ☒ **Adapters.** Cisco is incorporating I/O adapter virtualization. There are four adapter options that can be mixed within the blades.
- ☒ **Virtualization.** Cisco has built-in capabilities for hypervisor bypass that help reduce CPU overhead and provide the ability to gain visibility into consistent network policies. Virtualization is enabled throughout UCS for virtual fabrics/blades or adapters. Cisco security, policy enforcement, and diagnostics features are now extended into dynamic virtualized environments.
- ☒ **Services.** Cisco has developed a new set of services and capabilities specific to the Unified Computing System. In addition, Cisco will be collaborating with partners like Accenture, CSC, EMC, TATA, and Wipro to provide the IT consulting and integration services that this system will require.
- ☒ **System management.** Cisco is partnering with BMC Software, EMC, Microsoft, and VMware to provide integrated system management for the Unified Computing System.
- ☒ **Support for Industry APIs.** In partnership with VMware, BMC, and others, the UCS supports industry-standard APIs.

The Cisco Unified Computing System and associated services will be generally available to customers starting in the second quarter of 2009.

Customer Requirements for the Datacenter

Cisco is introducing the notion that a single system that combines network intelligence with compute virtualization IT can meet the following requirements in the datacenter:

- ☒ **Manageability.** The Unified Computing System is a single comprehensive system that is architected to have all the individual components designed to integrate together, with a unified fabric and embedded management. Cisco is reducing the points that an IT organization needs to manage. Some key features that contribute to manageability include the ability to abstract server characteristics from the physical node hardware. With predefined and precreated server identities called service profiles, IT managers can define service profiles for applications. Service profiles help automate provisioning and increase business agility, allowing datacenter managers to provision applications quickly.

- ☒ **Utilization.** As an architecture that is optimized for virtualization, it will provide the most efficient utilization rates.
- ☒ **Virtualization.** By utilizing Cisco network intelligence as well as network interface virtualization, this system is enhancing the scalability, performance, and operational control of virtual environments.
- ☒ **Simplicity.** Universal interconnect provides a unified fabric to PCIe bus. Part of the simplicity message is that the Unified Computing System will remove unnecessary switches, adapters, or management modules. It requires less than one-third of the support infrastructure of competing solutions. With integrated management and diagnostics, the Unified Computing System will simplify deployment.
- ☒ **Scale.** The Fabric Extender network in combination with the stateless enclosure enables organizations to scale throughout the datacenter. The Cisco network will scale as services are added. The Unified Computing System provides fewer servers with more memory.
- ☒ **Efficiency.** Fewer servers, switches, adapters, and cables with fewer points of management contribute to lower power consumption.

The UCS Manager service profiles lay the foundation to provide monitoring, provisioning, image management, orchestration, or policy management

FUTURE OUTLOOK

IDC believes that this introduction by Cisco will spur innovation in the systems marketplace. We also believe that Cisco's existing customer base will be receptive to this type of offering and will be open to integrating this vision as part of their own overall strategies. The large enterprise and service provider datacenters with pervasive virtualization at the core are the initial target market. While this TAM represents about \$4 billion in revenue opportunity, it is 20% of the overall market. Key to Cisco's ongoing future success will be meeting the needs of additional workloads such as database and continuing investment in datacenter orchestration and automated policy management.

Implications for Servers

From a volume perspective, the Cisco Unified Computing System solution is not an immediate major competitive threat. Cisco is targeting a small set of its existing customers, and IDC expects these volumes to be moderate in the short term. Long term, however, the Cisco vision is very competitive with existing server vendors' own datacenter strategies.

This introduction from Cisco is helping to evangelize a new set of tightly integrated products that are increasingly coming to market to serve the needs of the most demanding customers. Server virtualization is the platform for the future datacenter and as such is an easy target. This introduction from Cisco does raise the bar on server functionality in terms of memory and I/O capabilities, which have been

identified by large virtualization customers as hurdles for them in implementing their own long-term datacenter strategies. This announcement by Cisco forces the major server vendors to respond with their own solutions and long-term product road maps.

What remains to be seen is if Cisco has the resources to build out a large ecosystem that is required for broader adoption beyond virtualization. IDC expects that each major server vendor will respond by highlighting its deep relationship with software vendors, channel partners, and services companies. While these are fairly significant challenges that Cisco will have to overcome, IDC believes that the systems market is entering into a new era where tightly integrated systems are required to solve large customers' complex problems after a long period of extreme modularity in the datacenter.

Platform Applications

Entering the broader IT market will require Cisco to provide customers with a wide array of applications to run and support. If Cisco doesn't consider this, then it could quickly become another hardware vendor, which, ironically is the place from which it is trying to move. It has taken IBM over 20 years of investment, mergers and acquisitions, and in-house research and development to come up with the suite of applications. To that end, one of the key challenges for Cisco will be to attract developers to write systems-based applications to run on its Unified Computing System. One option would be to open up the Unified Computing System and incent developers to come to the platform. However, to date, this has been a challenge. Another option would be to consider buying a vendor that has a large development community, that writes applications for a broad array of infrastructure platforms, and that would be friendly to the whole Cisco ecosystem.

Implications for Networks

As the demand for an IT supplier to deliver more agility to its architecture increases, it is evident that suppliers must leverage and include the network as part of a total solution. Cisco is tightly integrating the Ethernet network into the Unified Computing System. The increased demand for hosting and cloud-based services as well as IT centralization efforts into larger condensed datacenters increases customers' need for a resilient high-performance network today and in and of itself creates a sizable opportunity. The datacenter network market reached \$9.6 billion at the end of 2008. The scale and complexity of mixing modular physical and virtual workloads requires closer integration between the network and the rest of IT. IDC believes the push to the next wave of virtualization in support of an on-demand datacenter will require a richer set of network services. Datacenter managers and IT decision makers want visibility into the logical infrastructure across datacenter domains. Additionally, large customers have reached an inflection point where workload mobility cannot be achieved without advances in network and I/O virtualization. Cisco is addressing this problem through the Unified Computing System.

Cisco's enterprise switching and routing business in 2008 generated \$15.1 billion, which represents 69% share of that combined market and roughly 40% of Cisco's 2008 revenue. (Note: Enterprise is inclusive of most spending by content service

providers in these numbers.) IDC also estimates that roughly 20–25% of that revenue flows through major system integrator partners such as Accenture, IBM Global Services, and HP Services. The billion-dollar question is the degree to which Cisco's presence in the datacenter has been pushed by IBM and HP versus pulled by customer demand. Even if IBM and HP services decided to actively discourage customers from using Cisco products tomorrow, these revenue streams would largely remain for some time as the bulk of the revenue goes into servicing and refreshing the installed base. In the case of HP, the ProCurve division continues to gain share in the overall market but does not have a competitive offering to Cisco's Nexus in the datacenter. In the past few months, HP has integrated its ProCurve networking group into its Technology Solutions Group, thus uniting the networking, storage, server, software, and services organizations in the same group. In fact, HP has been positioning itself for the stepped-up competition from Cisco for some time (see *HP Welcomes ProCurve to the Family: Announces Datacenter Network Strategy*, IDC #IcUS21645909, January 2009).

In the case of IBM, Juniper is a growing partner but does not have the installed base to replace the Cisco revenue stream. While IBM and HP are likely to develop new products and partnerships that may shift share toward other Ethernet switch vendors, namely Brocade, Force10, and Juniper, IDC believes the threat to Cisco's core business in the near term is limited.

System Management: UCS Manager and BMC BladeLogic Automation

Embedded management is a key strategy for the Unified Computing System. Cisco will provide a device management tool, UCS Manager, that will be used to define, maintain, and provision Unified Computing System profiles that include compute, storage, and network resources. Once defined, profiles can be requested as needed by business services. The Unified Computing System announcements also include a partnership between Cisco and BMC Software that prepackages major pieces of BMC's Business Service Management platform into the Unified Computing System, including provisioning and configuration management using BMC's BladeLogic software. The BMC BladeLogic integration with Cisco UCS Manager provides a unified mechanism to bridge the hardware service profiles from the Unified Computing System with the business service software profiles that specify application, operating system, and virtual machine configuration policies and dependencies provided in BladeLogic. The IT staff will use the BMC BladeLogic tool as part of their day-to-day operation of the Unified Computing System when there is a need to reconfigure applications and their associated resources. BMC's modules expose Unified Computing System management information and configuration data in real time to broader enterprise IT management workflows and tools including the CMDB (Atrium). Via Atrium information can also be integrated into BMC's other portfolio products including service desk, service catalogs, asset management systems, performance and availability reporting, and event impact assessments tools. Customers can purchase Cisco's Unified System prepackaged with BMC's BladeLogic service automation suite, including BMC Atrium technology, when the Unified Computing System becomes generally available to customers starting in the second calendar quarter of 2009.

Implications for Services

From a services perspective, Cisco is well regarded in providing traditional networking consulting and integration services; however, it has less experience in traditional IT services. To this lack of experience, Cisco has been expanding its services offerings. However, this announcement will require that it expand the breadth and depth of its services offerings to include traditional IT infrastructure services. This market is a market in which Cisco does not have as strong a reputation. To counter this, Cisco has partnered with Accenture, CSC, EMC, TATA, and Wipro. In fact, Accenture and Cisco have jointly announced the Accenture and Cisco Business Group in February to expand on their existing relationship. IDC feels that this announcement puts Accenture in a very strong and structured position as a go-to partner for Unified Computing System services and all of the IT transformation issues that companies would need to address.

IDC believes that through its partnerships with companies like these, Cisco will be able to provide the range of services that enterprise-class customers require for the integration and deployment of these systems. Perhaps more importantly, Cisco will have a partner that can align technology benefit with business objectives. Accenture's ability to drive the Unified Computing System technology discussion from an architectural perspective and use its deep industry expertise to implement in specific vertical segments will be of great value for Cisco as it looks to penetrate a new technology segment.

IDC believes that Cisco will need to balance the need to augment its services capabilities with the risk of alienating its current channel and services providers. Given the target market for the Unified Computing System, IDC believes that the list of appropriate services partners is limited to the larger IT infrastructure services providers such as Accenture, CSC, HP Services, and IBM Global Services. However, even existing relationships with long, established partners like HP Services and IBM Global Services are at risk given that Unified Computing System will compete with a key part of HP's and IBM's product portfolio. Cisco has a much larger suite of partners that it is dependant on to provide services around its core networking products, but many of these are ill suited to provide services around the Unified Computing System. Services is a key element of Unified Computing System and as such, Cisco must develop a broad stable of services partners with the capabilities to reduce the complexity associated with implementing Unified Computing System.

Implications for Storage

The one major IT element explicitly absent for the Unified Computing System announcement is storage. Cisco is explicitly endorsing FCoE as a critical network interconnect, but it isn't developing its own storage hardware and data management software solutions. In part this reflects the stratification of server and storage operations in large enterprises, though its does run counter to the more integrated server/storage approaches deployed in many Web 2.0 environments.

Cisco's Unified Computing System announcement will have two main impacts on the storage industry. The first will be an acceleration of storage solutions for virtualized

datacenters. Introduction of Cisco's Unified Computing System will accelerate the shift, both directly and through likely competitive responses, to a more virtualized datacenter infrastructure. Storage hardware and software suppliers have been reacting to growing use of server virtualization for the past several years, and this announcement will only serve to accelerate these developments, especially in the areas of backup, disaster recovery, automated provisioning, and efficient capacity utilization.

The second major impact of Cisco's Unified Computing System announcement is less certain but potentially much more revolutionary. Aside from figuring out how to integrate virtualized servers into existing SAN environments, many enterprises' most important storage challenges relate to the growing diversity of information sets they must store and manage. These include storage pools dedicated to disk-based backup/recovery, data analytics, data retention for compliance/ediscovery, and long-term archiving of rich media (the biggest long-term storage challenge).

These increasingly diverse storage requirements are driving the development of role-based storage systems that leverage standard, scalable storage modules, large pools of standard processing resources (aka servers), and specialized software to meet the unique requirements of each use case. HP, with its 9100 Extreme storage platform (a prepackaged blade server, SAS storage modules, and clustered file system software), is an early example of this product development trend.

Leading storage companies like EMC and NetApp that want to play a major role in these emerging role-based storage market segments need to deliver next-generation server-based components as well as their own storage platforms and supporting software. Cisco's Unified Computing System, with its emphasis on simplified manageability, deployment flexibility, and scalable performance, would be an interesting option in terms both functionality and competitive positioning. IDC believes that at least one major storage provider will choose to OEM/resell Cisco's Unified Computing System within the next six months as part of its new product development efforts.

Channel Impact

Cisco is unquestionably a strong player in the indirect market and has adopted this sales motion wholly into its DNA. Much to its credit, the company recognizes and acknowledges that its work with the indirect partner community has been key and core to its success. It is because of this knowledge and familiarity with the partner community that Cisco is aligning the introduction and initial rollout of the Unified Computing System with a select group of services-oriented alliance partners as well as Cisco Data Center Certified Partners that have networking, compute, virtualization, storage, and integrated services practices. It will also offer an Authorized Technology Provider (ATP) Program for Unified Computing with a focused go-to-market strategy that will expand to demand. IDC agrees that the target market for this product is one that is largely served by direct sales, but it also believes that Cisco must be very careful to ensure that the traditional partners are aware of this product, Cisco's sales strategy, and any road map that may become available. As the news of this announcement spreads, Cisco partners need to be able to communicate the core message to their joint customers. And they need to be aware that if adoption of this

new product ramps, it is likely that the product will start to move downstream as we have seen with many technologies. It is usual that entry of this type of product will start at the highest end and eventually work its way into more of the mainstream. Cisco partners should and will have the opportunity to decide whether or not this technology direction is something that they believe will complement their current models or not. If Cisco decides to continue to develop products in the unified computing area, it may be wise for the company to consider seeking additional complementary partners to help deliver this product and the services around it. For many Cisco partners, their core business is networking; some have added more voice, or UC, telepresence, and so forth. As the Cisco portfolio expands, Cisco would be well served to expand its partner community — not to create competition for the partners but rather to broaden the net, which could in fact create a very nice and effective Cisco partner network in which partners, each with its own area of expertise, create a solution to collectively serve a customer.

Leasing and Financing

Within the enterprise computing market, an essential aspect of any product's go-to-market strategy is the availability of leasing and financing options for both large enterprise-class customers and resellers. For example, in 2008, over \$89 billion of IT equipment, software, and services were leased or financed worldwide. In certain segments such as midrange servers, over 35% of all acquisitions in some markets are leased. Cisco, with its internal business unit Cisco Capital Finance, has built a robust leasing and financing capability that provides both customer and reseller programs. As a result, when the new product ships (scheduled for 2Q09), IDC expects aggressive leasing and financing offers that match or best competitive financing programs — eliminating yet another market barrier.

Competitive Response: Innovation and Marketing

IDC believes that this announcement will usher in the next wave of innovation in datacenter solutions. Cisco is not the first supplier to deliver a solution that integrates compute and networking, but it is the first major networking supplier to go broad and deep into compute architectures. As a result, IDC expects a competitive response on multiple fronts. IDC expects the large services companies to aggressively respond via channel and marketing programs. Further, IDC believes that HP in particular will be able to leverage the breadth and depth of its services offerings to impede Cisco's growth in this market. The types of datacenters that Cisco is targeting with the Unified Computing System tend to be customers that make heavy use of external IT services providers for IT consulting and integration services.

IBM's reaction will be a bit different. The company has a stronger partnership with Cisco. Finally, IDC believes that this announcement does not pose a significant threat to the IBM services organization. Within IBM services, IDC believes that Global Business Solution, which consists of consulting and integration services around its applications and application management services, will be minimally impacted by this announcement. IDC also believes that over time IBM Global Technology Services may need to adapt some of its network and server services offering to be more integrated.

IDC believes that of all the x86 blade server providers, Dell will be the least impacted. The main reason for this is the market segments that Dell is targeting do not have significant overlap with the initial target market for the Unified Computing System. Dell is mainly targeting smaller datacenters and midmarket companies. Because Unified Computing System's initial success will be in large datacenters, the overlap is minimal.

Unified Computing System

Cisco is entering a market that is at an inflection point. IDC believes that when a large provider such as Cisco enters the market, it will essentially create a rising tide for many of the smaller players that have attempted to disrupt the compute landscape. Additionally, the Cisco Unified Computing System offers a clean sheet approach to solve datacenter challenges by offering a single holistic solution with integrated management and the critical support necessary for scaling virtualization. By increasing the performance and scale of virtualized environments while at the same time improving the ability to control and manage virtual workloads, this solution has the potential to deliver the full benefits of virtualization across the datacenter to increase productivity and agility and reduce IT costs.

Copyright Notice

This IDC research document was published as part of an IDC continuous intelligence service, providing written research, analyst interactions, telebriefings, and conferences. Visit www.idc.com to learn more about IDC subscription and consulting services. To view a list of IDC offices worldwide, visit www.idc.com/offices. Please contact the IDC Hotline at 800.343.4952, ext. 7988 (or +1.508.988.7988) or sales@idc.com for information on applying the price of this document toward the purchase of an IDC service or for information on additional copies or Web rights.

Copyright 2009 IDC. Reproduction is forbidden unless authorized. All rights reserved.

Published Under Services: Datacenter Networks; Software and Hardware Support Services; Enterprise Servers: Technology Markets; Technology Financing Strategies; Channels and Alliances: Hardware Infrastructure; Worldwide Services; Emerging Services Opportunities; Storage Systems; European Storage Systems; Enterprise Networks; Enterprise System Management Software