Transform your business. Let us help you modernize your data center in preparation for big data and cloud initiatives with our market-leading Cisco UCS® Integrated Infrastructure solutions built on versatile Intel® Xeon® processors.

Imagine the possibilities: an environment in which all IT resources are part of an elastic, scalable, flexible, and self-service infrastructure that can be put into action at any moment—an environment in which your IT department is empowered to accelerate business initiatives and business decisions are made with real-time data. With Cisco UCS Integrated Infrastructure, we can help you modernize your data center as a first step in transforming your business.

You are probably assessing cloud and big data technologies as solutions to increase your agility and competitive advantage. In the Gartner Data Center Conference Poll conducted in December 2013, 87 percent of all respondents reported that they have adopted a cloud computing strategy. And the article “The Advantages of Digital Maturity” (MIT Sloan Management Review, November 2012) reports that companies using big data analytics (along with social and mobile initiatives) were 26 percent more profitable, with 9 percent more revenue and a 12 percent higher valuation, than their competitors. You can’t expect to get the results you seek with old, traditional, siloed infrastructure. To move your data center into the future, you need an infrastructure that is as elastic and agile as you want your business to be. We can help you modernize your infrastructure and data center best practices to gain the most from of your cloud and big data initiatives.
Challenges with Aging RISC/UNIX Infrastructure

Data centers are full of aging RISC/UNIX servers that cannot support today’s business needs. Costs associated with the purchase, maintenance, software licensing, and servicing of these servers continue to escalate. In addition, very few public or private cloud environments are based on RISC/UNIX servers, because the systems are expensive, inflexible, and burdened with complex system management frameworks.

Reduced Cost Effectiveness

RISC/UNIX server acquisition and maintenance costs are now a significant component of IT budgets. On average, the platforms have a 65 percent higher total cost of acquisition than servers based on x86 architecture. In fact, high operating and maintenance costs in combination with per-core software licensing costs often place RISC/UNIX systems at a significant disadvantage compared to x86-based systems. Figure 1 shows how the savings in Oracle Real Application Clusters (RAC) licensing costs alone can pay for an entire Cisco UCS solution. In addition, the price of energy and data center space continues to rise, making efforts to power, cool, and house these systems burdensome. With more college graduates experienced in open source Linux administration rather than in customized UNIX administration, skilled personnel are harder to find and expensive to employ. These factors, together with flat or shrinking IT budgets, show that continued reliance on RISC/UNIX architectures no longer is cost effective.

Decreased Operating Costs

“Ordinarily, expanding from two to three data centers would be expected to increase operational costs by 50 percent. Our operational costs will actually decrease by 40 percent when we expand from two to three data centers. A major reason is the space, power, and cooling savings from consolidating from 84 to 30 racks.”
—Shreyas Shah, Senior Director, Global Information Technology, Avago Technologies

Declining Volumes Increase Costs

Companies developing RISC-based architecture face declining volumes and increasing development costs for each subsequent generation. These trends call into question the long-term viability and economics of aging RISC architecture.

Performance and Flexibility Are Necessary to Remain Competitive

You are faced with a variety of challenges. More users are generating increasing amounts of data that must be processed and accessed, with demands for additional performance capacity frequent and unpredictable. In many instances, today’s aging and proprietary RISC/UNIX infrastructure fails to deliver the performance, flexibility, and agility required to support the modernization of applications and the dynamic demands of the business. At a time when data centers are moving to cloud or infrastructure-as-a-service (IaaS) platforms, flexible, standard, nonproprietary platforms and solutions are needed more than ever.
Modernize with Cisco

Modernization is the first step toward supporting a private hybrid cloud and big data initiatives in your organization. First you will want to standardize on flexible, industry-standard infrastructure that is integrated, easy to manage, and easy to scale.

Integrated Infrastructure Based on Cisco Unified Computing System

IDC, in its Worldwide Quarterly Integrated Infrastructure and Platforms Tracker published in September 2014, defines integrated infrastructure as “systems ... designed for general-purpose, distributed workloads that are likely to have differing performance profiles.” The Cisco Unified Computing System™ (Cisco UCS) is the basis for the top-two integrated infrastructure solutions on the market.

Unique Benefits of Cisco UCS Integrated Infrastructure

Cisco UCS is the first truly unified data center platform that combines industry-standard x86-architecture servers, networking, virtualization awareness, storage access, and embedded model-based management in a single system that unifies infrastructure and management. Cisco UCS is cost-effective, intelligent infrastructure that simplifies and accelerates the deployment of enterprise-class applications and services, providing an infrastructure that is as nimble and fast as your business has to be.

Cisco UCS enables your business to be more agile and competitive while simultaneously reducing the total cost of ownership (TCO). The advantages of Cisco UCS are recognized across the industry: 75 percent of Fortune 500 companies having invested in Cisco UCS, and IDC declared that Cisco is the number-one x86-architecture blade server vendor in the Americas (IDC Worldwide Quarterly Server Tracker 2014Q1, Vendor Revenue Share).

Powered by Intelligent Intel Xeon Processors

Cisco UCS is powered by intelligent Intel Xeon processors that enable you to be more responsive to business needs with enhanced virtualization, automation, and orchestration. Each new generation of Intel Xeon processors delivers even more performance to promote rapid innovation and new insights—as Cisco proves over and over again with world-record results on industry-standard benchmarks.

Cisco can help you analyze the costs and benefits of Cisco UCS compared to your existing infrastructure to give you a clear view of how your data center can better support your business.

Enterprise-Ready Linux

By 2017, there will be only two operating systems that matter in the market: Linux and Microsoft Windows (Figure 2).

Trusted by companies around the world, enterprise-ready Linux uses the

More Servers per Administrator

“For the size and scale of our environment, I have a relatively small staff managing it. On the network side, I only have four network engineers managing 30,000 network devices. And on the 400 servers we have, I only have four server administrators. So we’re running a very efficient shop.”

—Sumon Acharjee, Director, Information and Communication Technology, Sheridan College

(Sheridan College Case Study)
Modernize your Data Center and Transform Your Business
With Cisco UCS Integrated Infrastructure

economics of open source software as a foundation to provide optimal application operation with enterprise-class service and support. Cisco UCS supports all enterprise-ready Linux distributions including Red Hat, Oracle, SUSE, and Ubuntu. Cisco UCS running Linux delivers outstanding performance, scalability, reliability and security for cloud and big data deployments as well for enterprise applications.

**Microsoft Windows Support**
Cisco UCS also supports all current Microsoft Windows Server versions, giving you complete access to the broad ecosystem of x86-architecture applications and workloads. In addition, Cisco UCS and Cisco UCS Manager are integrated with both Microsoft Windows Hyper-V and Microsoft System Center management for single-pane management of your Windows Server environment.

**Migrate**
After you have standardized on Cisco UCS and Linux, you need to migrate your applications and update your processes to this new, agile, high-performance infrastructure. While migrating, you will also be standardizing processes to reduce costs and increase IT staff efficiency.

**Consolidate**
During this entire process, you will most likely be consolidating multiple older RISC-based servers onto a single, more powerful infrastructure. This consolidation will enable you to save hardware, software, power, cooling, warranty, and staffing costs. With intelligent automated management, each of your administrators will be able to manage more servers and still have time to focus on strategic initiatives that will enable your business to grow and be more competitive.

**Intelligent Infrastructure Today and into the Future**
Cisco UCS and Linux come together to create unique solutions that can simplify and accelerate deployment of enterprise-class applications and services running in bare-metal, virtualized, and cloud-computing environments. This infrastructure provides extreme flexibility to businesses.

**Outstanding Performance and Availability**
Cisco UCS with intelligent Intel Xeon processors delivers cost-effective high-performance, advanced reliability and the data protection that businesses expect for their most data-intensive applications.

**Outstanding Performance**
“Our most important driver was performance. Performance testing delivered improvements that were up to 20 times faster with the Intel Xeon platform than we had been able to achieve on our existing RISC-based systems. We went from almost 100 percent CPU utilization to barely achieving 20 percent. The Cisco Unified Computing System and architecture gives us a lot of room to grow.”
–Paul Di’Vittorio, Director of Private Cloud Architecture, EMC

[EMC IT RISC Migration Case Study]
enterprise applications. Intel Xeon processors are designed to meet business performance needs, with reliability, availability, and scalability features often greater than what is available with current RISC processors. Cisco UCS has a comprehensive server product line that enables both scale-up and scale-out application architecture to fully support business needs. Some of the world’s most successful companies, across a variety of industries, have transitioned their most critical business applications and database deployments to Cisco UCS. You too can transform your mission-critical computing environment so that it is ready for the challenges of both today and the future.

Over 100 Performance World Records
The balanced resources of Cisco UCS integrated infrastructure, including high-performance processing, impressive I/O bandwidth, and large memory capacities, can help you achieve greater performance for your data center applications. Cisco UCS servers with versatile Intel Xeon processors have captured more than 100 world performance records with first-to-market results or results that exceed those set by other system vendors, including Dell, HP, and IBM as of the date of disclosure. Please visit http://www.cisco.com/go/ucsatwork to learn more.

Cisco UCS Integrated Infrastructure Saves You Money
Cisco UCS Integrated Infrastructure has significantly fewer network components, cables, and management points than traditional integrated infrastructure. With fewer devices to purchase, manage, power, cool, and maintain, Cisco UCS solutions have dramatically lower TCO. Cisco SingleConnect technology (Figure 3), which is an integral part of the Cisco UCS integrated infrastructure, dramatically simplifies the way that data centers connect to:

• Rack and blade servers
• Physical servers and virtual machines
• LAN, SAN, and management networks

The solution addresses the challenges of today’s data center, and the result is a simple, intelligent, and efficient fabric that is:

• Easy to deploy: Cisco SingleConnect technology provides a “wire once and walk away” solution that eliminates traditional manual, time-consuming, error-prone processes and instead makes the process of connecting servers to Cisco UCS integrated infrastructure fast and easy.

• Intelligent: The technology is intelligent because it uses a zero-touch model to allocate

Figure 3. Cisco SingleConnect Technology Means Lower Costs and Less Complexity

Cisco Support: Depth of Experience
“We received great support from Cisco Services in helping us test and deploy the implementation on schedule. They also helped us take advantage of features that we otherwise would not have known how to optimize for our needs. We were pleasantly surprised with Cisco’s expertise and depth of experience with Cisco Unified Computing, Oracle, and data center technologies.”

—Paul Di’Vittorio, Director of Private Cloud Architecture, EMC

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I/O connectivity (LAN, SAN, and management) across any type of server: physical rack and blade servers and virtual machines. The network intelligence helps Cisco UCS adapt to the needs of applications. Rather than limiting applications to specific servers, Cisco UCS makes it easy to run, change, add, or subtract any workload on any server.

- **Efficient**: The technology is highly efficient because LAN, SAN, and management connections are shared over a single network, increasing utilization while reducing the number of moving parts compared to traditional approaches with multiple networks.

**Simplified and Automated Management**
Cisco UCS is intelligent infrastructure that is self-aware and self-integrating. When new components are added to the system, they are automatically placed in resource pools, making deployment fast and easy. The system is built from the foundation so that every aspect of server identity, personality, and connectivity is abstracted and can be applied through software. Servers are configured automatically, eliminating the manual, time-consuming, error-prone assembly of components into systems. Every aspect of the infrastructure can be configured dynamically, making each server ready to power any workload at any time.

Cisco UCS with its built-in, policy-based automation Cisco UCS Manager and extended geographic management with Cisco UCS Central Software provide the foundation for simplified management. The addition of Cisco UCS Director automation and orchestration tools helps IT departments transform operations, making staff more efficient and effective. These solutions deliver scalability, agility, security, and reliability at a reduced TCO.

**Achieve 1-to-100 (or Greater) Staff-to-Server Ratio**
Cisco UCS eliminates the manual, time-consuming, error-prone assembly of components into systems because every aspect of the Cisco UCS infrastructure can be configured automatically and dynamically, making each server ready to power any workload at any time. Gone are the days of sticky notes from one administrator to another to communicate important configuration information for individual systems. Cisco UCS Manager enables, encourages, and supports immediate, real-time, and efficient cooperation between administrative roles, with cross-role visibility. This visibility provides a path to the preprovisioning of critical elements in the deployment process. The inherent cooperative nature of Cisco UCS Manager removes the traditional data center management silo barriers, which historically have reduced staff efficiency.

**Beyond Efficiency: Making IT More Productive**
Cisco UCS helps organizations go beyond efficiency: it helps them become more effective through technologies that promote simplicity rather than complexity. The result is secure, flexible, agile, high-performance, self-integrating information technology that delivers reduced staff costs with increased uptime through automation and more rapid return on investment (ROI).

**Cisco Modernization Services**
Not all modernization projects are the same. Proper planning and a sound methodology are required to help ensure a successful outcome. Using an abundance of experience garnered from assisting customers worldwide, Cisco® Advanced Services consultants can help you exploit the significant architectural innovations of Cisco UCS running Linux for RISC/UNIX migration and data center modernization.

Cisco modernization services provide a flexible approach that adapts to the complexity and importance of the applications you’re migrating. These services build on strong relationships with enterprise software vendors, including Oracle and SAP, as well as trusted service delivery partners with vast experience in migrating commercial off-the-shelf and custom applications.

Cisco Advanced Services use proven, industry-leading methodologies and practices to migrate RISC processor-based applications running on proprietary UNIX systems to the award-winning Cisco UCS running Linux. Complete sets of services are available to help you confirm ROI and reduced TCO, perform test migrations,
and migrate applications based on your criteria and needs.

**Cisco Is Your Trusted Data Center Partners**

Cisco is in a unique position to help you migrate your mission-critical applications to state-of-the-art platforms with greater choice, greater efficiency, and innovation that can propel your data center far into the future:

- **Choice:** Cisco believes in open ecosystems so that you have investment protection through an open architecture. Using industry-standard x86-architecture servers together with commercial open source enterprise Linux distributions, this solution gets your modernization effort started right.

- **Efficiency:** With dramatically faster deployment times and a standardized and proven methodology for transitioning to a modern architecture, the Cisco solution can help you make this transition efficiently, with lower capital expenditures and operating expenses.

- **Innovation:** By modernizing your data center using innovative solutions from Cisco you help your data center become a truly elastic resource that can expand and contract as your business needs change.

With Cisco UCS Integrated Infrastructure, Cisco provides a comprehensive, cost-effective approach to modernizing your data center.

**For More Information**

For more information, contact your local account representative or use the following resources:

- To learn more about Cisco migration services, visit [http://www.cisco.com/go/migratetoucs](http://www.cisco.com/go/migratetoucs).
- To learn more about Cisco UCS Integrated Infrastructure, visit [http://www.cisco.com/go/ucsintegratedinfrastructure](http://www.cisco.com/go/ucsintegratedinfrastructure).
- To learn more about Cisco UCS, visit [http://www.cisco.com/go/ucs](http://www.cisco.com/go/ucs).