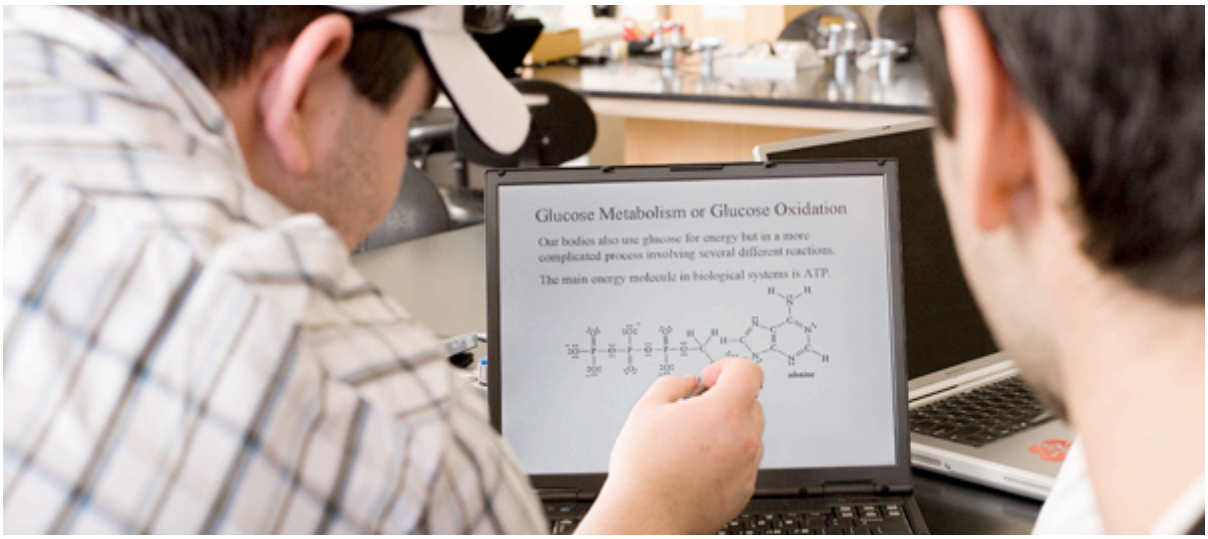
Cisco Cloud Enablement Services for Education



Bringing the Cloud to the Campus

In today's higher education environment, IT organizations must keep pace with a long list of competing demands:

- Deploy applications and deliver student services at a rapidly accelerating rate
- Provide effective strategy, support, and standardization to efficiently meet the demands of the many departments, schools, and organizations that IT must support as part of their university community
- Compete against other universities, many of which differentiate themselves in the market based on the services they offer to students
- Scale to meet expanding needs, often without a proportionate increase in budget for hardware, software, and personnel
- Reduce CapEx and OpEx costs while maintaining the highest levels of security and privacy
- Manage the day-to-day demands of the data center while enabling an innovative, technologically advanced educational environment for faculty and students

Balancing these demands is far from easy. Even as students ask for a growing number of services, traditional IT infrastructure remains relatively inflexible. At many universities, disparate departments make buying decisions without relying on an overall technology strategy. Meanwhile, IT teams find it more and more difficult to accommodate the proliferation of personal devices — including tablets, smartphones, and laptops — that students bring into the campus environment. And with privacy concerns increasing every year, many IT organizations are unsure how to maintain robust security in the long term.

"Cloud computing" refers to the practice of abstracting resources and services from the underlying IT infrastructure, and providing those services on demand in a multitenant, elastic environment.

In order to meet these challenges, universities increasingly look to cloud computing as an efficient, scalable, secure alternative to more traditional modes of IT service delivery. In fact, a 2011 study conducted by U.S-based company CDW-G shows that only 5 percent of college and university IT organizations are *not* considering a move to the cloud.[1] In addition, the Higher Education Funding Council for England (HEFCE) developed a new program in February 2011 that would invest up to £10 million in cloud computing, shared IT infrastructure, and support to deliver virtual servers, storage and data management applications for universities and colleges.[2]

As IT organizations consider the possibilities of cloud migration in a higher education environment, they commonly ask the following questions:

- Does cloud computing make sense for our college or university?
- How can we anticipate the challenges of migrating to a cloud architecture and make the transition easier?
- How can we plan and build a cloud architecture that comes in on time and on budget?
- How does the cloud affect our security and the security of our users?
- How can we achieve an optimal balance between public and private cloud computing?
- Can cloud computing help our IT team focus more of its efforts on enhancing the educational experience for faculty and students?
- How can we measure the benefits of cloud computing and make sure that we will see a return on investment (ROI)?
- Can we customize our cloud strategy in order to realize maximum benefit and help ensure ongoing cost reductions?

Cisco® Cloud Enablement Services can help your organization address these questions with a portfolio of services aimed at the development of a comprehensive cloud strategy. By deploying a secure, efficient, and scalable infrastructure-as-a-service (IaaS) cloud environment, custom-designed for your college or university, you'll be in an excellent position to deliver a broader range of student services in less time and at lower cost.

Transitioning to Cloud Computing

Migrating to a new cloud model is much more complex than implementing a single technology — it requires a shift to a new operational model. For the first time, new data center technologies such as virtualization, consolidation, and automated provisioning have combined with solutions such as the Cisco Unified Computing System™ (Cisco UCS™), which unifies network, computing, storage access, and virtualization resources in a cohesive system. The result is an IaaS cloud utility architecture that is both technically and operationally feasible.

[1] "Higher Ed Cautiously Embraces the Cloud," *eCampus News*, July 12, 2011.
[2] "Shared Services in Cloud Computing to Be Funded by HEFCE," February 2011.

To enable IaaS, institutions of higher education can choose from several cloud deployment models:

- **Private clouds.** Enterprise IT infrastructure services, managed by the organization, with cloud computing features such as self-service, pay-as-you-go chargeback, on-demand provisioning, and the appearance of infinite scalability.
- **Virtual private clouds.** Cloud services that simulate the private cloud experience in public cloud infrastructure.
- **Public or external clouds.** Cloud infrastructure made available to the general public through web browsers or through APIs, but offering limited customer control.
- **Community clouds.** Cloud infrastructures shared by several organizations and supporting a specific community; for example, several campuses may join to form an educational community in a cloud.
- **Hybrid clouds.** In the near future, cloud infrastructures will be capable of supporting two or more clouds interoperating or federating through networking technologies, across data center and across organizational boundaries.

No cloud service is a one-size-fits-all solution, nor is the potential move to the cloud an all-or-nothing proposition. Institutions of higher education must first determine the needs of their users and the right balance between the public and private clouds, taking all relevant legal and security issues into consideration. And as with any major technology initiative, it will be necessary to carefully define objectives and requirements, understand risks, and plan for maximum return on investment (ROI).

Cisco Cloud Enablement Services Approach

Cisco Cloud Enablement Services empower institutions of higher education to identify, implement, and operationalize the most effective IaaS solution for their organizational needs. These enablement services can help you:

- Build your cloud business case
- Virtualize and dynamically provision network, computing, and storage resources
- Enable new IaaS services with security built into every layer of the infrastructure for a secure, compliant cloud-computing environment

Cisco Cloud Enablement Services is an offer that provides expert guidance from the initial strategy through the planning, design, and implementation stages of your targeted IaaS. Drawing on extensive experience in delivering secure, end-to-end, virtualized data centers, Cisco provides a comprehensive, architectural approach for enabling IaaS that considers the people, processes, and technologies involved across your network, computing, and storage resources. This approach encompasses the selection of infrastructure management tools to orchestrate new services, service-oriented billing and chargeback mechanisms, and alignment of people and processes to manage IT services.

As part of its Cloud Enablement Services, Cisco also provides two overlying functions: a program management office (PMO) and architecture management office. The PMO is a common service element providing project governance, communications planning, risk mitigation, and ongoing management status updates for on-time, coordinated delivery of the IaaS architecture.

The architecture management office aligns your organization, technologies, and operational architecture to your strategy, utilizing standardization and automation to reduce costs. The office includes a solutions architect providing onsite and remote analysis and reviews of your end-to-end architecture to help ensure adherence to the cloud IaaS architectural design across all service phases.

Cisco Cloud Enablement Services offer:

- **Choice.** Cisco provides strategy, design, planning, implementation, and integration services, allowing you to choose the vendors, partners, and solutions that meet your needs and create a best-in-class solution.
- **A comprehensive, architectural approach.** Cisco's approach to cloud enablement is designed to enable cloud computing as a new operational model. Cisco utilizes a comprehensive architectural approach to provide customized cloud infrastructure solutions and uses validated tools and methodologies to accelerate cloud implementation while mitigating risk. Cisco delivers its enablement services across the business architecture, technology architecture, data center systems management, network management systems architecture, operational architecture, billing and service-level agreement (SLA) architecture, and facilities architecture.
- **Extensive virtualized data center and unified computing expertise.** Many virtualization efforts focus on server (rather than network) virtualization, thus limiting the potential of the cloud-computing approach. By relying on Cisco's network experience to address the entire cloud architecture and collaboration challenge, you benefit from a comprehensive perspective that takes in all the elements, driving down both CapEx and OpEx. Cisco and its ecosystem of partners offer extensive, real-world technology and domain expertise across network, storage, and computing resources.
- **Best-in-class solutions and partners.** A cloud architecture can encompass diverse technologies and business partners, both within and outside the organization. Cisco's collaborative partner approach applies the combined expertise of Cisco and its global partner ecosystem to reduce the risk and accelerate the benefits associated with a transition to cloud computing. Cisco Cloud Enablement Services help integrate your technologies, tools, and partnerships into a cloud solution of your choice.

Cisco Cloud Enablement Services

Cisco Cloud Enablement Services include:

- Cloud Strategy Service
- Cloud Planning and Design Service
- Cloud Implementation Service

Cisco Cloud Strategy Service

What can cloud computing do for your IT organization in terms of controlling costs, delivering ROI, and affecting processes?

The Cisco Cloud Strategy Service employs ROI tools and provides in-depth analysis of your current architecture and technology choices — with a primary focus on security — to help you determine the most appropriate cloud strategy and architectural options. It also helps assess your architectural options for various cloud uses, such as disaster recovery, online and remote learning, and computing as a service. Additionally, this service helps you evaluate data center applications and dependencies, as well as the management tools and operations management approaches involved in a migration to cloud computing.

Unlike a device- or application-level approach to security, Cisco takes a comprehensive architectural approach. Security is integrated into every layer of the IaaS architecture enabled by Cisco, and all service delivery elements are secure. This core capability is then customized to your environment and institutional mandates.

As part of the strategy service, Cisco provides several cloud security assessments, which you can select according to your organization's needs. These security assessments focus on needs such as the following:

- Safeguarding sensitive data so that it remains behind the campus firewall
- Protecting faculty and students against malware, phishing attacks, spam, and blended threats
- Enabling full-time students, campus visitors, and mobile users to share consistent protection policies

Security assessments include:

- Assessing the current data center security architecture and identifying gaps between current state and future cloud security architecture state
- Assessing your existing private cloud security architecture, identifying areas to strengthen protection, and providing improvement recommendations
- Assessing whether an application, content, or network service is suitable for migration to a public cloud

In multitenant cloud environments, users may have both unique and overlapping security clearances. Our services help address these complexities as a cohesive process for protecting systems and information, helping you to:

- Understand your existing security processes and how they are governed
- Evaluate the effectiveness of these security processes
- Improve security processes to better address requirements
- Analyze operational and technical controls
- Develop a common control framework based on analysis of the controls

As a result, the cloud will be closely aligned with the institution's governance, risk management, and compliance (GRC) priorities. As your GRC priorities adapt and expand, they can be incorporated smoothly and consistently into a cloud GRC program.

Cisco Cloud Planning and Design Service

Once your university's IT organization has identified a secure cloud strategy through the Cisco Cloud Strategy Service, the next step is creating a detailed architecture design to implement the IaaS solution.

This design stage is crucial for validating that the architecture aligns with the institution's goals, reduces risk, and accelerates time-to-value. This service addresses a primary question: which architecture can maximize virtualization, orchestration speed, and chargeback design?

The Cisco Cloud Planning and Design Service provides a comprehensive, detailed design encompassing network, computing, storage, network services, network security, management tools, and processes to realize the target IaaS architecture.

The IaaS design service covers the following:

- Technology and management tools architectures
- Security from an end-to-end security framework view (including identity and trust, security event monitoring and correlation, policy enforcement, isolation, and resiliency)
- Cloud operations readiness
- Service-level agreement and chargeback development
- Migration planning
- Facilities, mechanical, and electrical design

Cisco offers substantial expertise in the underlying technologies of network, storage, and computing to deliver advanced, virtualized data centers, while detailing operational processes and recommending best practices. As part of Cisco Cloud Enablement Services, the Cisco team will also transfer any unique intellectual property that may benefit your IT teams.

Cloud Planning and Design Service is crucial to linking strategic objectives with a secure overarching design, which prepares the foundations for subsequent implementation and integration activities.

Cisco Cloud Implementation Service

Given the complexity of the transition from current-generation IT approaches to a cloud operational model, migrating to the cloud represents a significant long-term investment, with potential risks. The major challenge is "How do we realize our cloud architecture — on time, on budget, and securely — in our specific environment?"

The Cisco Cloud Implementation Service helps enable the migration from your environment to a Cisco cloud computing architecture. Cisco manages the implementation and integration of the end-to-end architecture by staging and delivering application migration, provisioning, and service orchestration of your desired cloud computing environment.

Cisco and its best-in-class partners bring extensive data center and virtualization expertise to the integration and staging of the cloud, providing you with:

- A fully operational IaaS architecture
- An automation tools architecture
- Progressive implementation of new cloud-enabled IT services

The service reduces risk around cloud migration and helps ensure that the IaaS architecture aligns with the ROI metrics defined during the Cloud Enablement Strategy Service activities. These activities include:

- Technology, security, tools, and facilities implementation
- Orchestration integration
- Workload migration
- Staging and validation

The Cisco Cloud Implementation Service uses internal Cisco intellectual property, proven methodologies, and Cisco partners to accelerate the implementation of cloud architectures, tools, and processes. Cisco helps to ensure that the architecture blueprint is accurately realized in an on-time manner. Cisco Services also provides specialized expertise in the operation of Cisco networking equipment and the Cisco Unified Computing System so that you benefit from a best practices implementation.

Benefits of Cisco Cloud Enablement Services

Cloud computing is much more than just a new technology architecture or operating system. Security, systems management tools, chargeback mechanisms, operational procedures, and SLAs are all important in addition to the network, computing, and storage technology.

The Cisco Services approach draws on extensive data center and virtualization expertise, proven best practice methodologies, and Cisco's unique intellectual property to support cloud-enabling technologies. Cisco Cloud Enablement Services help higher education institutions:

- Accelerate the development of a financially justified cloud strategy with a measurable ROI
- Help ensure that IaaS infrastructure, management, people, and processes maximize the success of the cloud transition
- Accelerate the development and implementation of an IaaS architecture, integrated tool design, and chargeback and security mechanisms validated by Cisco
- Create a phased migration plan to help ensure the successful adoption of the new cloud operational model
- Accelerate time-to-value of a data center architecture for cloud services creation and delivery

Customer Case Study: The City of Mesa, Arizona

In addition to institutions of higher education, a number of other public sector organizations are realizing the benefits of deploying a cloud infrastructure. The City of Mesa, Arizona, faced many challenges familiar to university IT organizations, which included:

- Steady rise in data center power and cooling costs
- Lack of a consolidated IT environment
- Slow deployment of new applications

By implementing a private cloud with the Cisco Unified Computing System, the City of Mesa can now automate data center processes, reduce overall data center power, and consolidate technology resources — all while enabling real-time interdepartmental communication.

Why Cisco Data Center Services?

Today, the data center is a strategic asset in a world that demands better integration among people, information, and ideas. Your data center works better when technology products and services are aligned with your needs and opportunities. Cisco and our industry-leading partners deliver intelligent, personalized services that accelerate the transformation of your data center. Using a unique combination of network- and application-based perspectives and a unified view of data center assets, Cisco takes an architectural approach to help you efficiently consolidate, virtualize, and manage data center resources. Cisco Data Center Services help transform, optimize, and protect your data center to reduce costs, deliver high availability, and improve application performance.

Cisco and Partner Expertise

Cisco and its industry-leading partners use best practices and proven methodologies to help you quickly and efficiently plan and deploy a high-performance, resilient, and scalable cloud architecture.

Cisco Cloud Enablement Services are delivered by experts who hold a wide array of industry certifications and are subject-matter experts in business and technology architecture and data center technologies. They have direct experience in planning, designing, and supporting virtualization solutions for institutions of higher education.

We offer the following expertise:

- Data center solutions architect
- Layer 2 and Layer 3 infrastructure architect
- SAN architect
- Layer 4 to Layer 7 architect
- Virtualization architect
- Cloud automation solutions architect
- Information security architect
- Network management architect with service orchestration expertise
- Customer system architect and administrator
- Project management

Cisco product and technology expertise is continually enhanced by hands-on experience with real-life networks and broad exposure to the latest technology and implementations.

Availability

Cisco Cloud Enablement Services for Education are widely available. Contact your Cisco account manager about availability in your area.

For More Information

For more information about Cisco Cloud Enablement Services, visit: www.cisco.com/go/cloud enablement.

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