

# ALL THINGS CLOUD: Developing an Institution-Wide Strategy



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**T**here is no doubt, cloud computing is hot. It seems you can't open your email or click on a technology article these days without reading about cloud computing.

Movement to the cloud continues to escalate. In its "2019 Trends to Watch: Higher Education,"<sup>1</sup> Ovum® predicts overall cloud spend to double from an estimated \$1.4bn in 2018 to \$3.2bn in 2022. Many believe cloud computing is one of the biggest technology revolutions in our lifetime.

There is also a major change underway with software applications. The paradigm has shifted to a service model. Software as a Service (SaaS) has quickly evolved from an emerging trend to a game-changer for software developers and users alike. And the move makes sense. According Ovum the spend in SaaS applications will see the highest amount of growth in the next five years, going from \$860M to \$2.1B.

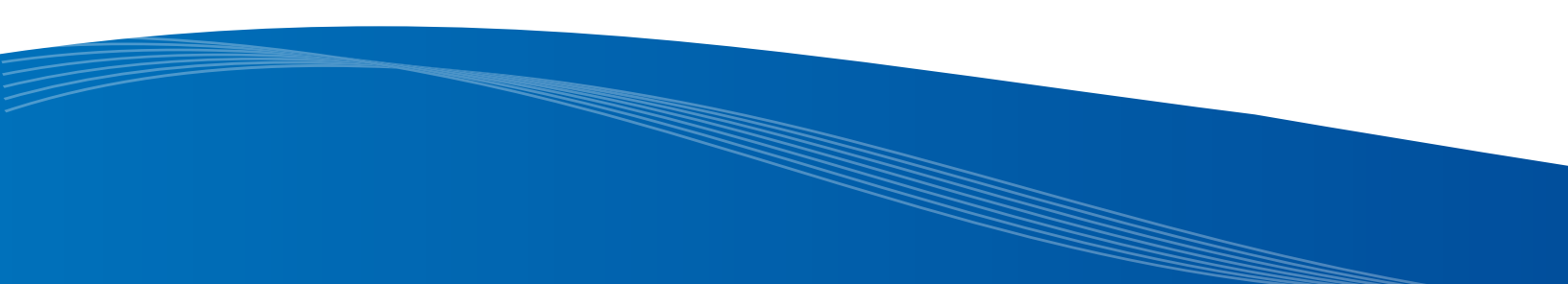
IT professionals are eager to learn how to leverage the cloud and the innovations it has spawned on their campuses. How can higher education IT professionals make sense of the plethora of information coming across their desk every day? What are the most important considerations when making cloud technology decisions?

This paper provides a high-level overview of the key elements of cloud computing in higher education. It provides guidelines and best practices for developing and implementing an institution-wide cloud strategy to make the most of the technology.



**Something happened in the first years of the 20th century that would have seemed unthinkable just a few decades earlier: Manufacturers began to shut down and dismantle their waterwheels, steam engines, and electric generators. They no longer had to run their own dynamos; they could simply buy the electricity they needed, as they required it, from new utility suppliers. Power generation was being transformed from a corporate function into a utility. Now, almost exactly a century later, history is repeating itself. Information technology is undergoing the same transformation. It's turning into a service supplied over a network. It's becoming a utility.**

**Nicholas Carr**  
Technology Journalist



## What is Cloud Computing?

One frustrating aspect of fast-moving technologies is that the terminology evolves almost daily. Some common definitions have been established, but codifying cloud computing is far from complete. Below are basic concepts this paper covers.

- ▶ **Cloud Computing or Cloud Hosting:** Scalable computer hardware and software residing in a remote location(s), usually a data center, delivered as a service to users via internet technologies (i.e., Web browser or mobile app).
- ▶ **Private, Public, and Hybrid Cloud:** Private clouds are hosted within a company's data center or at an offsite location and are available exclusively to the institution and its users. Public clouds are widely available to the general public and are typically hosted by third parties. Popular public clouds include Microsoft Windows Azure and Amazon Web Services. A hybrid cloud is a combination of interconnected public and private clouds.
- ▶ **Data Center:** A network center that is purpose-built to reliably house computer systems and components. Generally includes backup power, security, and a controlled environment optimized for electronic equipment. National standards categorize data centers in "tiers," ranging from Tier 1 to Tier 4. Tier 1 is a basic server room. Tier 4 is designed to host mission-critical servers and computer systems, with fully redundant subsystems and compartmentalized security zones controlled by biometric access control methods.
- ▶ **X as a Service (XaaS):** A distribution model where technology is hosted in a data center and accessed by the client via the cloud. The most well-known version is Software as a Service (SaaS), which usually includes automatic updates and patch management. There is also Platform as a Service (PaaS) and Infrastructure as a Service (IaaS).



**Having a cloud strategy will enable you to apply its tenets quickly with fewer delays, thus speeding the arrival of your ultimate business outcomes.<sup>2</sup>**

**Donna Scott**  
Vice President and Distinguished Analyst  
Gartner Research

## Moving Higher Education to the Cloud

Cloud technology is enjoying broad use in Fortune 1000 companies. According to IDG, "Nine out of 10 companies will have some part of their applications or infrastructure in the cloud by 2019, and the rest expect to follow by 2021."

According to the same survey, 73% of organizations have at least one application or a portion of their computing infrastructure already in the cloud. Although cloud computing is gaining traction in higher education, with email, calendar, media management, LMS, and CRMs based in the cloud, it has yet to reach the adoption levels seen in the greater business world for the types of computing where the highest impact is realized.



of organizations have at least one application or a portion of their computing infrastructure already in the cloud.<sup>3</sup>

According to Ovum "The practical path forward for many institutions is a hybrid approach, as it still can be very difficult to rip and replace a school's legacy systems (such as ERP or SIS). Instead, extending on premise systems with cloud services and combining them with other cloud-based systems will decrease the burden of maintenance on the institutional IT staff and enable more opportunities for innovation."

Change is not easy. Many IT departments struggle with real obstacles as they begin to cautiously blend innovative technologies into their existing systems. Budget constraints keep outdated servers in use long beyond their life expectancy. Allocating resources and creating an optimal environment for housing hardware can be difficult. It's not uncommon for space-constrained institutions to store critical computer hardware in what amounts to no more than a broom closet. On the other hand, today's students are very comfortable in the cloud. Having grown up in a world of Google and Gmail, social media, and online shopping, these "digital natives" come with high expectations for information access. The ubiquity of mobile devices has fully changed the higher education landscape. As students bring the technology they already use in their daily lives to campus, institutions are scrambling to accommodate and harness the digital aptitude of modern learners. The cloud promises to solve these problems and more for higher education.



**"Cloud" will be a ubiquitous term, like "network," as business solutions assume use of public cloud as a common asset.**

**David Mitchell Smith**  
Vice President and Gartner Fellow  
Gartner

## Delivering on the Promise of Student Success

Part of the cloud's appeal lies in its ability to transform the entire institution. Successful schools are harnessing new technologies to create personalized digital experiences that constantly adapt to the needs of faculty, students, alumni, and administration.

According to Donna Scott, Gartner Research Vice President and Distinguished Analyst, "Having a cloud strategy will enable you to apply its tenets quickly with fewer delays, thus speeding the arrival of your ultimate business outcomes."<sup>2</sup> Both inside and outside of the classroom, cloud computing and SaaS are opening up new cost-effective pathways for institutions to deliver an exceptional educational experience via a well-run enterprise, with reduced cost. The cloud helps higher education institutions deliver on the promise of student success. IT professionals are leveraging cloud computing to increase institutional agility, optimize IT systems performance, and maximize IT budgets.



**We've barely tapped areas that offer the greatest return on investment for performance and productivity.**

**Casey Green**  
Founding Director  
The Campus Computing Project

## Increased Agility

The common standards of cloud applications ensure their flexibility and extendibility for both short- and long-term needs. The ease of rolling out SaaS applications simplifies the move to the cloud for many campuses. Cloud computing also provides scalability as institutional needs shift, student needs change, and new market opportunities arise. As computing demands vary, such as the peaks caused during online registration, cloud resources scale up, only to later adjust on their own as demand decreases. IT departments find that the nearly instant on-demand provisioning of resources becomes vital to their operations. Cloud computing also helps organizations become more operationally efficient. It facilitates integration and helps remove functional data silos. Streamlined processes reduce bureaucracy, allowing for greater organizational adaptability.

Additionally, the cloud minimizes security threats and improves disaster recovery by locating critical infrastructure in a secure data center rather than within the institution. This results in an efficient, secure, cost-effective IT strategy that delivers unparalleled agility.

## Optimized Performance

Cloud computing and SaaS create a collaborative, interactive environment where information is available at any time, in any place, on any device. As higher education institutions continue to offer more online education and seek to enhance classroom instruction with technology, demands on their IT departments increase exponentially. Many schools are opting to hand over the everyday management, monitoring, and support to experts at a data center, as this frees up internal IT staff from mundane responsibilities and tasks outside their area of expertise, allowing them to focus on strategic initiatives.

Professional data centers provide an objective, real-time assessment of resource utilization. This allows for optimal efficiency by dynamically adjusting bandwidth and hardware allocation to address changes in demand. Virtual servers, accessed securely from the campus, multiple campuses, home, or the road, allow for high productivity, regardless of time of day, weather, or geographical location.

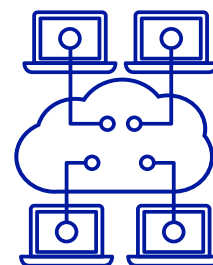
In addition, server demands are rarely consistent in any business. This is especially true in higher education. Institutions experience surges during enrollment periods and lulls during breaks. Delivering the computing capacity to handle those surges is often a balancing act. Higher Education institutions need to significantly over-purchase capacity for 95% of the year because of the demand they have for the other 5%.



**Although cloud computing is gaining traction in higher education, with email, calendar, media management, LMS, and CRMs based in the cloud, it has yet to reach the adoption levels seen in the greater business world for the types of computing where the highest impact is realized.**

IDG Cloud Computing Survey 2018

63%



of surveyed IT professionals say scalability was one of their top priorities with moving to the cloud.

## Higher Return

Adopting a needs-based computing approach is cost-effective. A no-hardware purchase, no-hardware maintenance strategy can save money across all areas of an institution's operating budget. McKinsey evaluates a potential reduction of 30 to 40 percent in the in IT overhead costs by adopting cloud services.<sup>4</sup> In addition to reduced long-term capital expenditures, institutions can lower costs for physical space and the associated overhead, equipment maintenance and upgrades, power consumption, cooling, and labor, all while attaining the most up-to-date technology as data center servers are regularly replaced.



Potential reduction in IT overhead costs by adopting cloud.<sup>4</sup>

The common standards that form the basis of cloud computing provide easy integration among systems. SaaS applications launch quickly, avoiding downtime and expense. Upgraded or added functionality is rapidly developed and rolled out. Institutions are automatically on the latest version, reducing costly and disruptive upgrade projects. And the high availability and disaster recovery optimization provided by data centers translate into increased uptime and productivity.

## The Importance of an Institution-Wide Cloud Strategy

As IT professionals look to the cloud to reduce infrastructure costs and increase efficiency, the rest of the institution eagerly anticipates the opportunities created across the entire campus. As with any quickly adopted innovation, the technology's appeal means users and department heads are keen to deploy even individual aspects of it, sometimes independently of the IT function.

The importance of an institution-wide cloud strategy cannot be minimized. Addressing it in a piecemeal fashion increases the complexity of updating aging IT infrastructure and legacy applications. Developing an institution-wide strategy will help the school realize all the benefits of cloud technology while providing a structured plan to effectively incorporate cloud services into the IT mix. A clearly stated and understood plan keeps all parties throughout the institution informed and aligned as changes occur.

## 4 Key Areas to Address in Your Cloud Strategy

Higher education institutions are well aware that many options await them as they design, build, and maintain their ideal cloud environment. Creating an effective cloud strategy means understanding how the essential components of cloud computing will impact the institution while creating the optimal mix for institutions. The four pillars of a solid institution-wide cloud strategy are: **Reliability**, **Stability**, **Effectiveness**, and **Security**.

### 1. Reliability

As with any fast-moving market, new vendors seem to enter the cloud computing arena daily. Higher education institutions need to sort through the clutter and find a cloud technology partner that acts as an extension of the school's enterprise. To select the right sourcing and solutions strategies, a school should seek out a vendor with:

- ▶ Extensive higher education expertise
- ▶ Communications at the executive level
- ▶ A high-quality reputation
- ▶ Peer school references

### 2. Stability

Not all data centers are created alike. Working in combination with a technology partner, the institution should carefully map out a needs assessment. Important stability factors to address include:

- ▶ Service availability (99.95% uptime performance or higher)
- ▶ Disaster recovery/business continuity
- ▶ Daily data backups to alternate data centers for safe data recovery
- ▶ Economies of scale (multiple client representation strengthens position with data center)

### 3. Effectiveness

Institutions embarking on the move to a SaaS + cloud solution have high expectations regarding ROI and overall business impact. Important effectiveness considerations include:

- ▶ Scalable bandwidth based on a school's actual day-to-day usage, growth, and peak-demand periods
- ▶ High staff efficiency
- ▶ Rapid deployment of new applications
- ▶ No-touch updates and maintenance



**Extending onprem systems with cloud services and combining them with other cloud-based systems will decrease the burden of maintenance on the institutional IT staff and enable more opportunities for innovation.**

**Joyce Kim**

Ovum

"2019 Trends to Watch: Higher Education, Modernizing institutional culture"



## 4. Security

IDG's cloud computing survey of 550 IT decision-makers found that their top three challenges or concerns with implementing cloud are vendor lock-in (47%), security (34%), and where data is stored (34%). When institutions speak of security they often refer to maintaining control over critical and confidential data. But the cloud addresses two types of security—physical and data security.

**Physical Security.** Moving server hosting to a professionally managed data center eliminates much of the risk associated with theft. An institution can expect a data center to provide:

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- ▶ Video monitoring
- 
- ▶ Locked doors
- 
- ▶ Keycard entry and ID badge system
- 
- ▶ 24x7 human monitoring of the virtual infrastructure
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**Data Security.** Outsourcing data center operations can strengthen access policies and user standards to ensure protection of institution-critical information. Disasters large and small can result in dislocation, disruption, delay, and lost data. Cloud hosting can help the institution protect itself should something go wrong. A solid cloud strategy will ensure:

- 
- ▶ Data confidentiality
- 
- ▶ Data integrity
- 
- ▶ Recovery after a data loss incident
- 
- ▶ Business continuity
- 
- ▶ Rolling 30-day server backup retention
- 
- ▶ HIPPA and SSAE SOC-2 compliance
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- ▶ ISO 27001, 27017, and 27018 certifications
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## Conclusion

Cloud computing continues to be one of the fastest-changing areas of technology. Combined with SaaS, the cloud is a reliable, secure, and responsive solution that helps streamline IT processes and reduce costs. It provides a way to increase capacity or add capabilities on the fly without investing in new infrastructure, training new personnel, or licensing new software. It extends IT's existing capabilities, lightens in-house workloads, and frees internal personnel to redirect efforts toward more strategic activities for the institution. Most importantly, cloud computing escalates an institution's ability to deliver on the promise of student success.

Cloud computing is here to stay, and end users are demanding the functionality it provides. Schools that fail to utilize cloud technologies and SaaS will be at a competitive disadvantage. Moving to an institution-wide cloud model is a pivotal investment for a higher education institution. Developing and implementing an explicit, holistic cloud adoption strategy must be a top priority for higher education IT professionals.

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## About Jenzabar

Created out of a passion for education and a vision for technology, Jenzabar offers disruptive, innovative software solutions and services that empower students' success and helps higher education institutions meet the demands of the modern student. Over 1,350 higher educational campuses harness Jenzabar solutions for improved performance across campus and a more personalized and connected experience for the student. For further information, please visit [jenzabar.com](http://jenzabar.com) or on twitter @Jenzabar or LinkedIn.

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