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Hitting the Sweet Spot for Cloud Deployment in Higher Education

How institutions can progressively exploit the agility of cloud solutions while managing risk

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Summary

Catalyst

The proliferation of cloud-based service offerings over the last five years is transforming every industry vertical. This is especially true in higher education, where the need to exploit the speed and agility of new models is exacerbated by budget constraints and the demands of staff, faculty, and students to interact through modern services.

The challenge is for institutions to identify a staged approach that maintains forward momentum in exploiting the benefits of cloud services.

Ovum view

The pace of change in higher education is increasing, and institutions are searching for ways to become more responsive to the demands of students, faculty, and the wider community in delivering educational services that are flexible, cost-effective, and tailored to individual needs.

The ability to deliver the educational experience by leveraging the various flavors of "cloud" radically changes both the investment profiles required for new services and the time frame in which they can be delivered. With leading institutions steadily incorporating various cloud components into their environment, it is clear that competitive advantage is available for those that can move swiftly.

In most scenarios, the benefits of cloud-based delivery are so compelling that if one were in the fortunate position of creating a "greenfield" deployment from scratch, "in the cloud" would be the default approach. However, few organizations are in this enviable position.

The reality is that institutions have to manage a legacy environment that has evolved organically over many decades. This does not just comprise the technology solutions, but also the supporting business processes, which can often be duplicative, inefficient, and inconsistent. Developing and implementing a staged migration strategy will be key to determining whether the "as-a-service" promise facilitates innovation or undermines organizational integrity.

Key messages

- "Cloud" delivery has significant potential agility and resourcing benefits for institutions.
- Institutions should adopt a "cloud by default" paradigm for all new deployments while accepting that existing systems may require a longer transition.
- Given that a hybrid or blended model is inevitable for some time, integration capabilities are critical, as is a clear understanding of the entire cloud and non-cloud ecosystem.
- Complexity remains a major driver of both system costs and migration risk. Proactively removing unnecessary customizations will smooth the strategic transition to cloud.
- There is considerable organizational risk in ad hoc cloud adoption, which can be managed through the implementation of a progressive migration strategy tailored to the institution's maturity.

Recommendations

Recommendations for institutions

Although IT departments within most institutions have a good understanding of cloud delivery models, there remains confusion regarding the tangible business benefits that can be realized. The challenge is to understand that despite all the hype, cloud is not fundamentally about technology – it is about new delivery paradigms. And it is important that decision-makers understand the innovation it enables as well as the purely financial advantages.

To capitalize on these benefits, institutions will need to develop a transition roadmap that takes account of the institution's specific business cycles, the age and capacity of currently installed technologies, and how the ecosystem will operate as a whole during its various stages of increasing "cloudiness."

Given the clear linkage between extensive customization and ongoing costs, the strategy should embed strong governance that sets a "high bar" for custom development in core systems. At the same time, every opportunity should be taken to reduce and remove existing customizations.

To deliver against the strategy while managing business risk, higher education institutions should look for partners with comprehensive domain knowledge as well as a credible cloud vision. Given the need to operate under a hybrid model for many years, particular attention should be paid to vendors' integration capabilities, ensuring that key applications such as student information systems (SIS), learning management systems (LMS), enterprise resource planning (ERP), customer relationship management (CRM), and a myriad of other function-specific applications are able to be interconnected, upgraded, and progressively swapped out with minimal disruption.

Recommendations for vendors

Unfortunately, "cloud" has become another industry buzzword that is used to market almost everything. As the term has become devalued, customers have become both confused and cynical as to whether the benefits of the latest "fad" are real – and whether they are worth the risks and change costs.

There is a crowded field of existing suppliers and aspiring new entrants, and vendors are advised to focus on two key differentiators to distinguish themselves from their competitors. Firstly, the higher education sector has some unique business and service delivery characteristics, and domain expertise is critical. Suppliers that have that expertise are advised to leverage it, and those that do not need to develop a strategy to acquire it. Successful partnerships with customers are based on relationships, and relationships are built on shared understanding. Without expertise in higher education, this will be difficult to achieve.

The second differentiator is the quality of integration between cloud and non-cloud components and the ability to build and support an associated ecosystem. Suppliers that can show how they will help institutions to progressively migrate business-critical components, while keeping the organization running reliably over a transition program that may span several years, will be the partners of choice in the new "education technology–as-a-service" world.

The pressures on education technology services

Do more with less – and do it faster

With pressure on budgets and the search for increased business value from scarce resources, "do more with less" is a well-worn mantra that continues to drive the search for efficiencies in all institutions. However, the accelerating rate of change, new entrants to the higher education space, and the drive for innovation are generating relentless pressure to not only do things cheaper, but also quicker. Agility, in terms of being able to change what you deliver very quickly, is now as important – and often more important – than pure cost.

Service comparisons are consumer driven

Today's students are a much less homogenous group than their predecessors. The National Center for Education Statistics (NECS) reports that 85% of students in higher education in North America could be considered members of a nontraditional demographic, by virtue of their age, life experience, or socioeconomic group. Ovum has identified servicing the needs of these nontraditional learners as a key trend for 2016 and beyond.

They generally arrive with a well-developed expectation of service gained elsewhere in their life experience and expect their chosen institution to match the delivery capabilities of the best consumer banks, social media sites, and online shopping channels. In addition, they are far more accustomed to switching service providers for a "better deal" than previous generations, and are consequently less averse to moving college or school if they are not getting the service they expect.

So what are the primary benefits of cloud for the higher education sector?

It is not all about cost

As cloud delivery has matured into the mainstream, a considerable amount has been written on the potential benefits. Unfortunately, in many cases the overwhelming emphasis has been on the financial aspects of using cloud delivery to save money. Although cost-effectiveness is important in cash-strapped institutions, an overwhelming focus on bottom-line dollars and cents underplays the major strategic benefits of cloud delivery. In some circumstances, a move to cloud delivery can even cost more in the early stages, especially in situations of historic underinvestment, so a financial assessment to the exclusion of other benefits can run the risk of prematurely closing off significant opportunities.

Agility to scale up and down

Ovum's view is that the primary business benefit of cloud delivery mechanisms is the agility they offer institutions. Decoupling service delivery from the need to procure, install, and configure significant resources not only frees up capital, but also speeds up delivery to end users.

When institutions are responding to a rapidly changing marketplace, and with expectations conditioned by interactions with commercial providers, time is of the essence, and taking several years to deploy a student portal or ERP is no longer viable.

Just as important is the ability to scale down when resources are no longer required. This has particular applicability to the pronounced "peakiness" of demand around key events such as registration or examinations. Catering for these high-demand periods can now be achieved by purchasing extra capacity to cover that time frame – rather than permanently provisioning additional resources that sit idle for most of the year.

Furthermore, when services can be closed down with no residual financial obligation, a virtuous circle is created that encourages the experimentation and innovation modern organizations require to thrive and prosper.

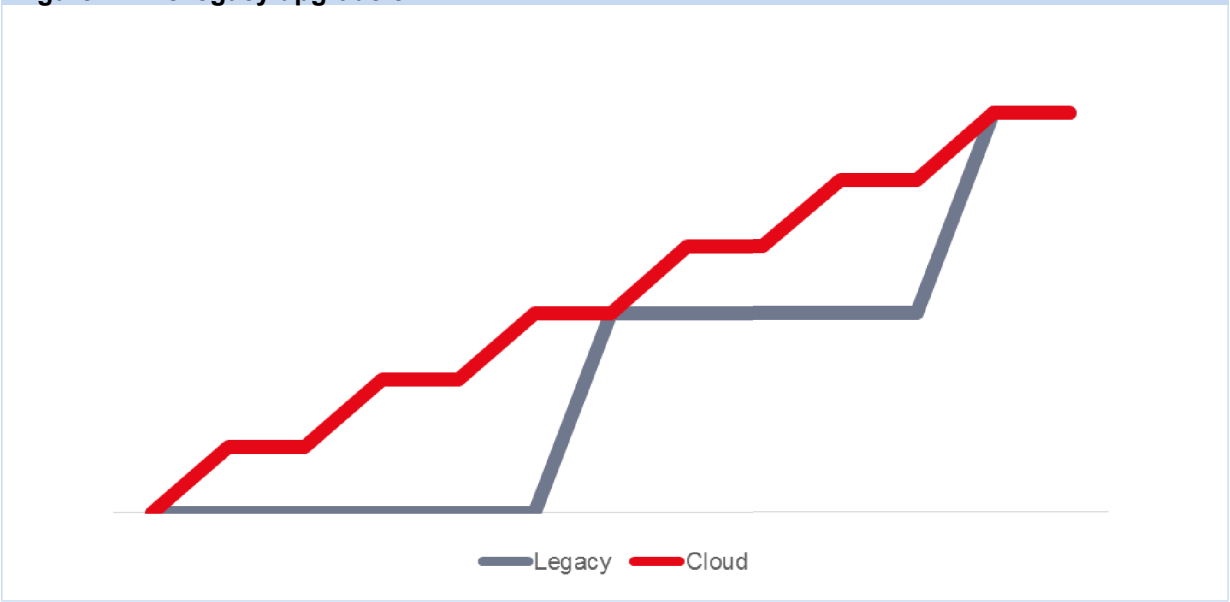
Smooth the upgrade cycle

Traditionally, enterprise IT organizations have taken a cautious approach to their upgrade cycles. Complex interdependencies between applications and the need to ensure continuity of key business processes have often rewarded an adherence to the "if it ain't broke, don't fix it" view of technology management. In fact, it is not unusual for an organization to regard the upgrade of the desktop standard operating environment (SOE) as so risky that it would defer until wholesale hardware replacement – delivering a new PC and updated productivity tools every four years.

The problem with that approach is that during the long period of technical "stability," upgrades are still being released by vendors, yet not implemented by the organization. Not only does this frustrate end users, but when the time finally does come to upgrade, the gap between the installed and current environment is huge, requiring much greater resourcing to address each step.

In contrast, cloud services embed a "continuous update" paradigm, where regular updates incrementally improve the solution. With each change being smaller, and the gap between them being shorter, the interdependencies and business risks of change are reduced (see Figure 1).

Figure 1: The legacy upgrade cliff



Source: Ovum

Expend resources on true differentiators

The underlying efficiency benefits realized by using the cloud delivery model are based on aggregation of the demand from multiple clients and standardization of processes. While those who hanker after the "good old days" will espouse the view that "bespoke is best" – arguing for heavily customized solutions for their organization – the truth is that for the vast majority of institutions, many critical business functions are not differentiators. With the major costs embedded in any custom development, organizations really need to ask whether their payroll, invoicing, or general ledger processes are differentiators when it comes to delivering educational outcomes. In most cases the answer is no, giving the institution an opportunity to adopt standardized services that are locally configured rather than customized.

Given that configuration changes are orders of magnitude cheaper to implement than customizations, reducing bespoke developments can make more budget available for functions that are true differentiators for end users.

Adopt innovation based on business benefit

Much has been written on the ability of cloud delivery services to make bottom-line savings for the institution. While there are certainly financial benefits available, the picture is a lot more nuanced than a simple "cloud is cheaper" proposition, which in Ovum's view has often crowded out full appreciation of other benefits.

It is important to understand that the underlying driver for cloud, of all flavors, is economy of scale. This is either by sharing the underutilization of hardware and software across infrastructure-as-a-service (IaaS) clients or by minimizing the configuration variations available to software-as-a-service (SaaS) customers.

It follows that solutions that require 100% resource utilization or substantial customization may not be cheaper under a cloud services model. Fortunately, on closer examination, very few applications in the higher education sector tend to have these characteristics, and in many cases, robust analysis will help institutions to confirm that they need less customization than they expected.

More significant is the shift to operational costs without significant recurrent capital investments. When costs are predominantly operationalized, barriers to expansion are minimized and organizations are freer, from a financial viewpoint, to adopt innovations based on business benefit rather than capital investment cycle.

So what are the possible approaches to cloud?

Do nothing?

One option in any technology planning process is to simply do nothing and continue procurement of capital-funded hardware and software, physically installed in an on-premise data center. While this might have an initial attraction of lower organizational change "risk," the constraints this places on the organization's ability to respond to market changes makes it an option with limited future prospects.

Rip and replace?

The alternative polar position is to undertake a wholesale migration to the cloud as soon as possible. After all, the argument goes, if the benefits of a cloud delivery model are so great, why wouldn't you want to take advantage of them as soon as possible and steal a march on the competition?

While delivering all services through a cloud model would be an attractive proposition in a greenfield implementation, few establishments find themselves in that space. In most cases there is a combination of existing legacy technology systems and legacy business processes that are intimately interwoven to support the organization in its day-to-day activities. Transforming every system to an alternative delivery paradigm in a big-bang approach is simply too risky, especially when critical applications such as SIS – the "crown jewels" of most institutions – are considered.

Key tenets of a migration strategy

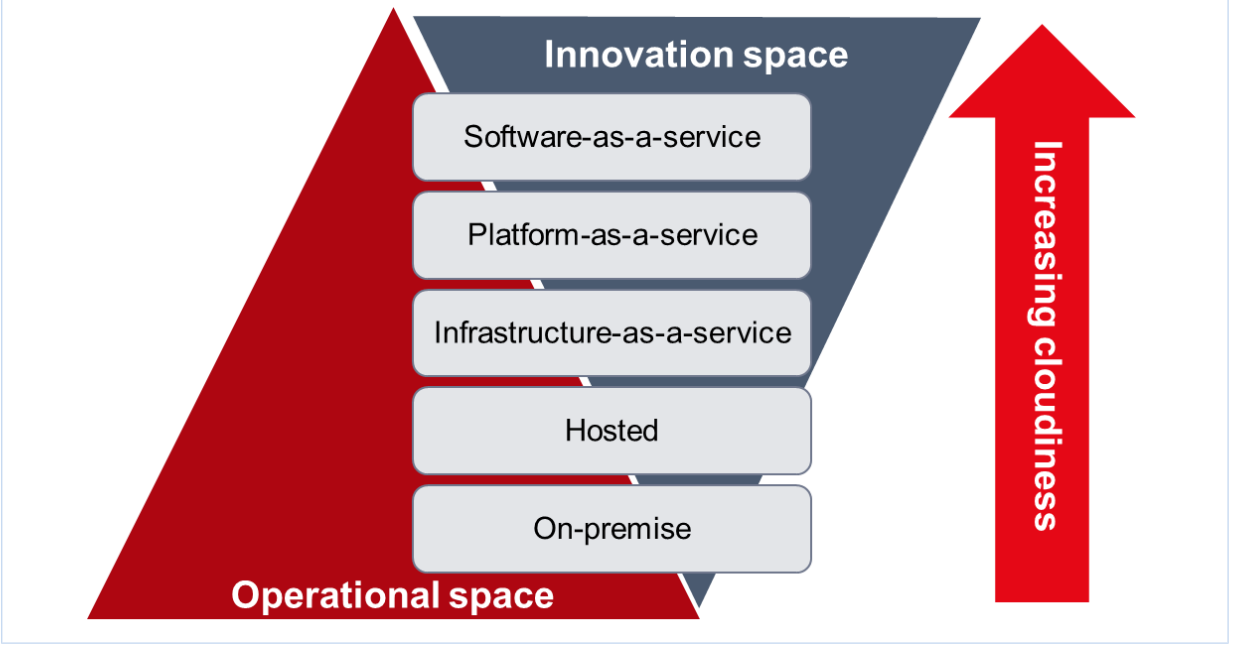
Stage the approach to steadily increase "cloudiness" and enable innovation

So if "do nothing" is not an option, and neither is "rip and replace," how can institutions progressively gain the benefits of cloud service delivery while sensibly balancing the risk to ongoing operations? The answer is to develop a strategic migration plan that assesses the characteristics of applications and services and identifies a logical progression to address them.

"Cloud" is convenient shorthand that encapsulates a number of "as-a-service" delivery models, including IaaS, SaaS, and platform-as-a-service (PaaS). Traditional on-premise delivery requires the organization to expend a lot of its resources on operational activities. It is not uncommon for this routine activity to consume over 80% of the technology budget. With increasing levels of "cloudiness," the operational component is reduced – leaving capacity to engage in innovation (see Figure 2).

The key consideration is that there is no requirement to jump from the bottom to the top for all services at one time. Moving from an on-premise to a hosted solution, for example, will deliver some initial benefits and can be used as a stepping-stone to higher levels.

Figure 2: Increasing the innovation space by increasing "cloudiness"



Source: Ovum

The Ovum CloudFit Framework is a useful tool that can be used to assess application characteristics and the broader institutional environment to identify the most appropriate delivery mechanism for a given level of organizational maturity.

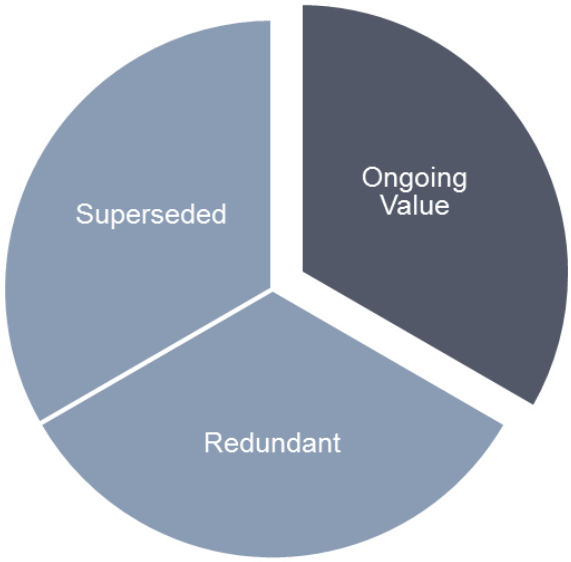
Simplify, simplify, simplify

For many years, technology groups have understood that the increased use of heavy customizations within line-of-business solutions significantly increases costs and reduces reliability. In some cases, these customizations have been necessary to deliver to the unique business requirements of the organization – but in many instances, the link with business outcomes has become increasingly tenuous.

This can add to system costs twice, initially when the custom design work is undertaken, and on an ongoing basis when unnecessarily complex testing is required when components are upgraded. Over the lifetime of mission-critical systems, such as ERP or CRM, managing the customizations can consume a significant proportion of the budget.

Analysis of customer environments prior to major upgrades by a major ERP vendor has confirmed that often, one-third of customizations have been superseded by standard functionality built into the upgraded product, one-third are no longer being used by the business, and only one-third are delivering ongoing benefits to the organization (see Figure 3).

Figure 3: Benefits of system customizations



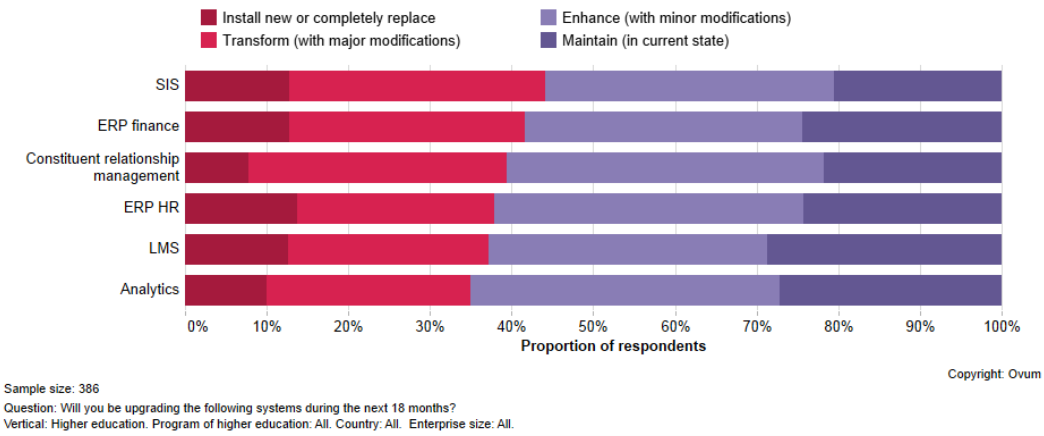
Source: Ovum

In this context, it is little wonder that many vendors are encouraging their clients to seriously assess their systems environment with the aim of proactively simplifying and standardizing wherever possible.

Match the business and technology cycle

The 2016 *Ovum Enterprise Insights* survey identifies that 35–40% of institutions plan to replace or make major upgrades to their core business systems within the next 18 months (see Figure 4).

Figure 4: Major systems upgrade plans (education)



Source: Ovum

All strategies should have a long-term objective, but must also take into account the specifics of each organization's circumstances. Major systems replacement occurs infrequently, so it is important that institutions have undertaken the preliminary work and planning to avoid "missing the opportunity" for transformational change.

Adoption of a "cloud by default" policy for all new deployments is an excellent way to gain traction without setting unrealistic goals. As the technology cycle progresses, a greater proportion of services will be delivered through cloud models – until a tipping point is reached where the remaining systems can be addressed. Leading institutions are embedding "cloud-preferred" approaches into their strategic technology planning – an application-agnostic policy that helps lift service delivery to students and redirects IT department resources to truly differentiating activities.

Integration is critical

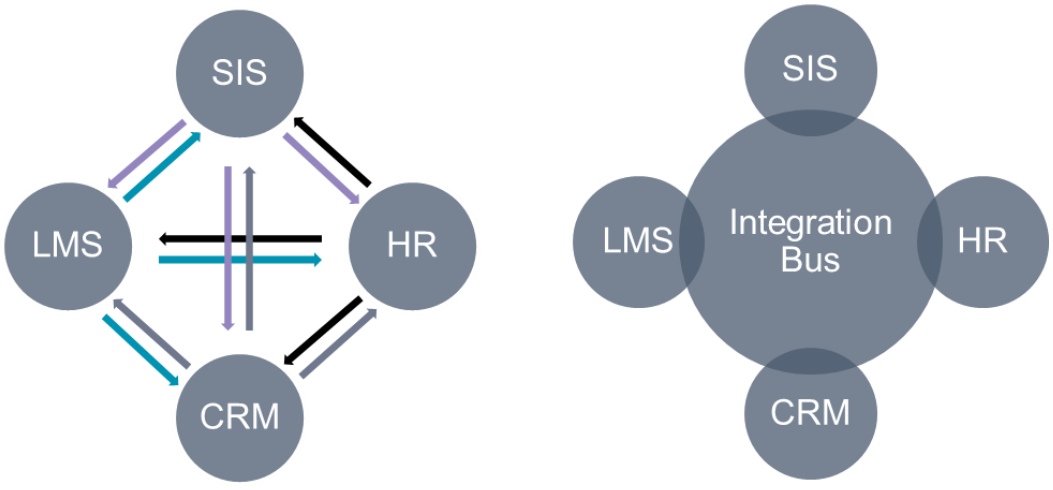
Given that a hybrid model incorporating both cloud and non-cloud components will be the norm for many years, institutions should consider integration as a core aspect of their technology planning. Identifying integration points and building them into the strategy also assists the evaluation of possible cloud solutions and provides a rationale for decisions to reduce uncontrolled cloud proliferation.

Over decades, institutions have invested significant efforts in their identity and authentication systems, improving their security and audit position as they move closer to the nirvana of "single sign-on." While pure single credential access remains an aspirational goal, major improvements have been realized that will be undermined by a proliferation of new systems without identity integration. For this reason, it is Ovum's view that identity integration should be "non-negotiable" for the adoption of new systems.

Of course the majority of institutions will have a plethora of existing systems to integrate, not just for identification purposes, but also to support data transfer, process integration, cross-departmental workflow, and organization-wide reporting. While all solutions offer some level of integration, the complexity of managing an increasing number of point-to-point connections will soon overwhelm the resources of most IT services (see Figure 5 [A]).

To minimize integration complexity, leading institutions are implementing an Integration Bus (see Figure 5 [B]). Under this model, each component only has a connection to the central bus, to be connected to every other system, vastly simplifying the addition of new capabilities and the swap out of old ones. These integration capabilities will be key differentiators for different solutions into the future.

Figure 5: Simplification of integration



Source: Ovum

Consider the ecosystem

With the focus on the seamless delivery of end-to-end services that may cross many applications, faculties, departments, and institutions, the entire ecosystem takes on a greater strategic role. The ability to share and transfer information using a common data model will become critical to ensure that institutional boundaries are transparent to the end user.

For decades, healthcare providers have collaborated to develop a common data description language in the ubiquitous HL7, which has facilitated the exchange of data and clinical information between organizations. There have been similar initiatives within the higher education sector, but as yet nothing has achieved equivalent widespread adoption or acceptance. While it is too early to conclude the exact model that will be universally accepted, it is certain that wider collaboration will be based on such an agreed model.

Aligning the technology strategy with an open and extensible ecosystem will ensure that the institution is well positioned not just for today's challenges, but also for those of the future.

Appendix

Methodology

Ovum analysts conduct regular briefings with colleges and universities globally to better understand the business challenges they are facing, trends related to technology strategy and adoption, and preferences for specific solutions. This report also leveraged the results from Ovum's 2015 ICT Enterprise Insights Survey, which is an annual program that interviews over 6,000 ICT decision-makers globally across a range of ICT topics. Analysis of secondary sources and interviews with leading technology vendors also supported the findings in this report.

Further reading

2016 Trends to Watch: Higher Education, IT0008-000256 (November 2015)

2016 Trends to Watch: Cloud Computing, IT0022-000607 (February 2016)

Innovation Case Study: Cloud Commitment at the University of Western Sydney, IT0008-000232 (April 2015)

"Golden age or burst bubble? The next ten years in higher education," IT0008-000243 (November 2015)

"For the public sector, custom solutions should be the last resort," IT0007-000863 (January 2016)

"Simplicity is a virtue we should all embrace," IT0007-000817 (May 2015)

The Ovum CloudFit Framework, IT0007-000753 (June 2014)

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