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Reducing Complexity in the Hybrid IT World

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COMMISSIONED BY

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About this paper

A Pathfinder paper navigates decision-makers through the issues surrounding a specific technology or business case, explores the business value of adoption, and recommends the range of considerations and concrete next steps in the decision-making process.

About 451 Research

451 Research is a preeminent information technology research and advisory company. With a core focus on technology innovation and market disruption, we provide essential insight for leaders of the digital economy. More than 100 analysts and consultants deliver that insight via syndicated research, advisory services and live events to over 1,000 client organizations in North America, Europe and around the world. Founded in 2000 and headquartered in New York, 451 Research is a division of The 451 Group.

INTRODUCTION

Each wave of technology change has challenged enterprises to redefine their business models for competitiveness. Today, at the height of the digital transformation era, extending IT estates beyond the corporate walls and adopting hybrid IT models to address a myriad of business requirements is accelerating among enterprises of all types. While a hybrid IT approach can take many forms, in the end, it's about ensuring the optimal use of a blend of cloud resources (public cloud, private cloud, or a mix of both) and non-cloud resources (on-premises or off-premises colocation and dedicated hosting services) in a heterogeneous IT environment.

In principle, it seems prudent to deploy new applications in the cloud; however, our survey findings suggest a different story in practice, with less than one-third of surveyed companies using the cloud as a default platform for new transformation projects. Since not every application is built for a cloud environment, ensuring the adaptability of services and applications – regardless of technology platform and infrastructure type – and bridging the gap between on-premises and off-premises resources are the new CIO mandates.

CIOs have begun to leverage tools and platforms that enable them to consolidate or eliminate the need for their IT staff to refactor or reengineer workloads – essentially making the workloads more portable across heterogeneous IT environments. Nevertheless, workload migration involves more than just the virtual machine. All security policies, network parameters, QoS and other specific configurations must be moved along with it. Ensuring the reliability and performance of applications in a dynamic environment requires enterprise IT to have a strong understanding of how different application components are bound together by business logic – not to mention the pertinent challenge in attaining alignment with the network team, which often works in silos.

Questions that are currently top-of-mind among IT executives include, but are not limited to, the following:

- What is the best formula for a hybrid IT model, and will it endure?
- Is there any prerequisite for hybrid IT deployment?
- When do fully managed clouds outweigh the benefits of self-managed clouds?
- What does one prioritize when selecting a managed cloud partner?

The Formula for an Optimal Hybrid Approach

Thanks to the growing availability of cloud technologies, many CIOs are now open to experiment with various new tools and platforms, and even incorporate them into their enterprise IT environments. Our ongoing dialogues with enterprise users suggest that in addition to dedicated infrastructure (colocation/hosting - 45%), business organizations now utilize a mix of hosted private clouds (30%) and public clouds (25%) for the delivery of IT services. The observed mix of on-premises and off-premises cloud environments is somewhat sensitive to geographical differences. In most European countries and some parts of Asia, privacy laws are more stringent than in the US, which helps set the tone for the hybrid IT approach.

The overall shift to a hybrid cloud model is likely to continue, as reflected in a previous study on enterprise IT services strategy commissioned by Telstra, *Enterprise Hybrid IT: The Role of Colocation, Cloud and Connectivity*. The ability to negotiate favorable SLA and performance metrics and achieve greater redundancy, while also scaling up the business, are important drivers for this shift.

Hybrid IT Infrastructure Prevails
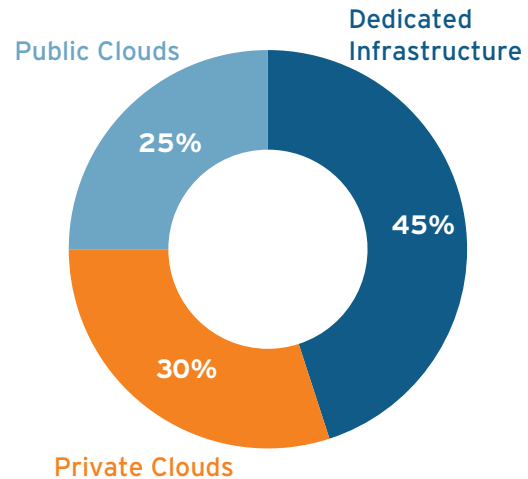
GROWING FOCUS ON INTERCONNECTEDNESS OF CLOUDS IN HYBRID SCENARIOS

When it comes to deploying multiple cloud-based services and technologies, enterprises are looking for ways to maximize their business value. As noted in the recent 451 Research Voice of the Enterprise: Cloud Transformation, Organizational Dynamics survey, the expected use of a single-cloud model (i.e., on-premises private cloud, hosted private cloud or IaaS/public cloud) accounts for approximately one-third of companies, while 'multiple parallel cloud environments' with multiple vendors comes in a close second at 27%. Yet 41% of organizations surveyed plan to use multiple clouds with various degrees of interconnectedness between these environments, with 24% moving data and applications between clouds, and 17% using multiple clouds to seamlessly deliver specific business functions (Figure 1).

Figure 1: Digital Transformation Accelerates Hybrid Cloud Strategy

Q. Which of the following best describes how your organization will use different on-premises and off-premises cloud environments over the next 2 years?
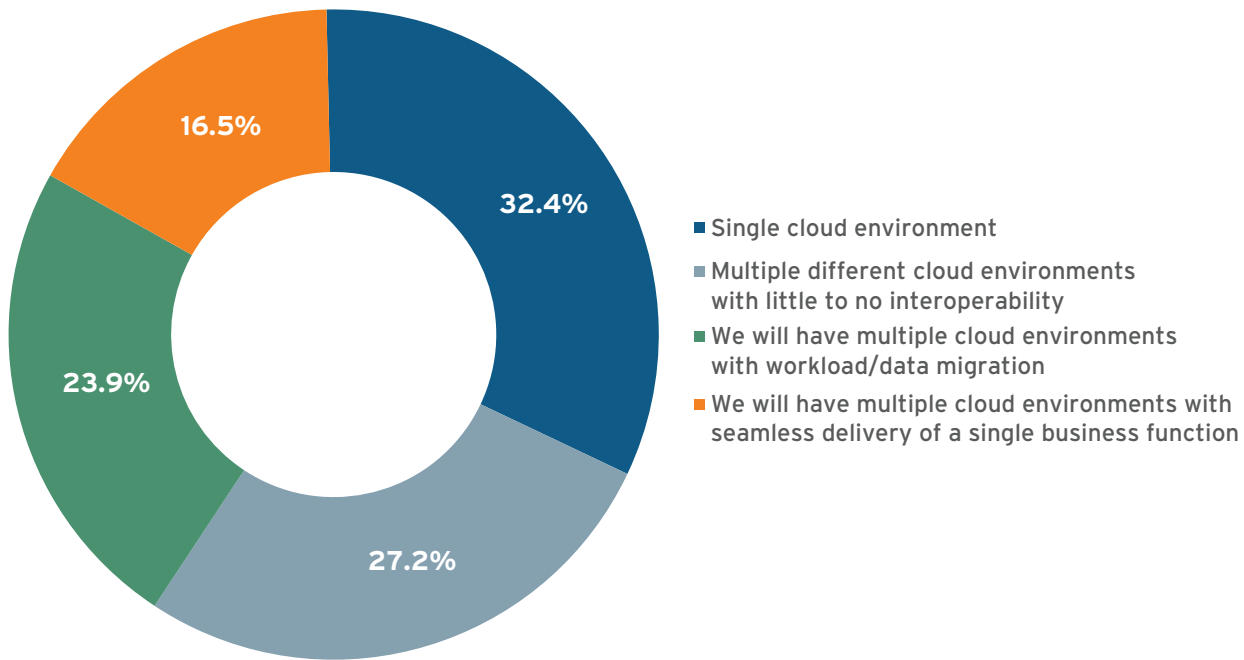
- Single cloud environment
- Multiple different cloud environments with little to no interoperability
- We will have multiple cloud environments with workload/data migration
- We will have multiple cloud environments with seamless delivery of a single business function

Source: 451 Research's Voice of the Enterprise, Cloud Transformation, Vendor Evaluations 2017

ACCELERATE DIGITAL TRANSFORMATION WITH HYBRID CLOUD STRATEGY

Hybrid cloud deployment is rapidly entering an entirely new phase – one that's destined to prove far more impactful than the initial phase of IT transformation – as companies begin to view this emerging hybrid cloud construct as an accelerator for broader digital transformation. Our survey results confirmed this outlook when we explored the relationship between the choice of cloud models and an organization's digital transformation maturity (see Figure 2). Digital transformation appears to play a critical role in the adoption of hybrid clouds, with usage of migration-oriented multi-cloud and hybrid cloud environments peaking among organizations that are currently executing on digital transformation strategies.

Figure 2: Hybrid Cloud Usage and State of Digital Transformation

Q. Which of the following best describes your organization's status with regards to digital transformation? (n=516)

No digital transformation strategy currently (n=69)
- Single cloud environment: 59.4%
- Multiple different cloud environments with little to no interoperability: 20.3%
- We will have multiple cloud environments with workload/data migration: 11.6%
- We will have multiple cloud environments with seamless delivery of a single business function: 8.7%

Considering digital transformation strategy, but no formal plans (n=86)
- Single cloud environment: 37.2%
- Multiple different cloud environments with little to no interoperability: 41.9%
- We will have multiple cloud environments with workload/data migration: 15.1%
- We will have multiple cloud environments with seamless delivery of a single business function: 5.8%

Formulating digital transformation strategy (n=135)
- Single cloud environment: 29.6%
- Multiple different cloud environments with little to no interoperability: 28.9%
- We will have multiple cloud environments with workload/data migration: 28.9%
- We will have multiple cloud environments with seamless delivery of a single business function: 12.6%

Executing on digital transformation strategy (n=180)
- Single cloud environment: 22.2%
- Multiple different cloud environments with little to no interoperability: 19.4%
- We will have multiple cloud environments with workload/data migration: 30.6%
- We will have multiple cloud environments with seamless delivery of a single business function: 27.8%

■ Single cloud environment
■ Multiple different cloud environments with little to no interoperability
■ We will have multiple cloud environments with workload/data migration
■ We will have multiple cloud environments with seamless delivery of a single business function

Source: 451 Research's Voice of the Enterprise, Cloud Transformation, Vendor Evaluations 2017

In terms of geography, US and Australian companies lead the way regarding the use of public clouds in a hybrid scenario. This comes as no real surprise, since much of the ICT sector in these two countries is undergoing a major transformation, with large corporations embracing the cloud – internal private cloud in particular – as part of their IT modernization plans. Companies have been going through the process of transforming their IT operations for some time. For example, deploying SaaS-based applications such as Office 365 and SAP HANA, which are fundamental to their business operations, is increasingly becoming the norm.

On the IaaS front, multi-vendor usage is common, with 59% of IaaS users surveyed leveraging more than one provider. IaaS multi-vendor usage involves parallel use of different IaaS environments for specific workloads, or generic usage by different business units or cost centers within an organization. Anecdotal conversation suggests that Indian enterprises have a high propensity to deploy cloud services to the extent possible as they hope to bypass existing infrastructure challenges – e.g., limited broadband access, unreliable electrical grids, and a great urban and rural divide. Nevertheless, managing partner relationships – i.e., getting multiple cloud partners to work together – is troublesome. To make a hybrid strategy endurable, companies must promote a culture of accountability.
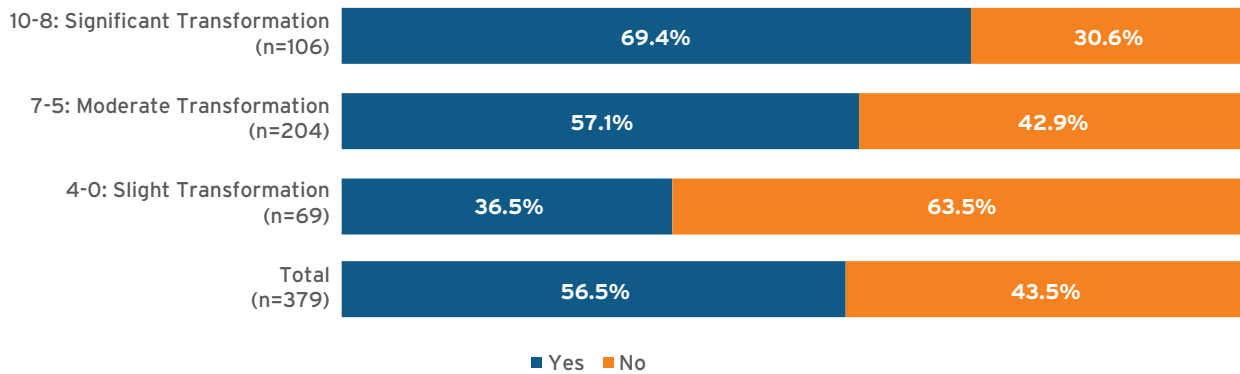
Hybrid IT Deployment: The Need to Address the Skills Gap

Given that leading commercial cloud platforms are built on proprietary standards as a basis for competitive differentiation, CIOs have their work cut out to ease business process management in a hybrid environment. There's also growing concern about the adaptability of underlying networks, which illustrates the fact that adding intelligence to make the network workload-aware is no small feat. Meanwhile, our survey results indicate that the majority of organizations (nearly 57%) report facing shortages of cloud computing expertise. Further analysis shows that up to 70% of companies that fully undergo transformation are challenged by a shortage of professionals with cloud computing skills (Figure 3).

Figure 3: Cloud Computing Personnel and Skills Shortage

Q. Please rate the level of transformation required in your IT environment to support the business over the next five years.
Q. Does your organization currently face a skills shortage in cloud computing expertise?

	Yes	No
10-8: Significant Transformation (n=106)	69.4%	30.6%
7-5: Moderate Transformation (n=204)	57.1%	42.9%
4-0: Slight Transformation (n=69)	36.5%	63.5%
Total (n=379)	56.5%	43.5%

■ Yes ■ No

Source: 451 Research's Voice of the Enterprise, Cloud Transformation, Organizational Dynamics

Figure 4 shows the skill sets that businesses deem most important for the management of cloud environments, as well as those they say are currently most lacking within their IT departments.

Figure 4: Bridging the Skills Gap – Important Cloud Management Skills vs. Skills Lacking
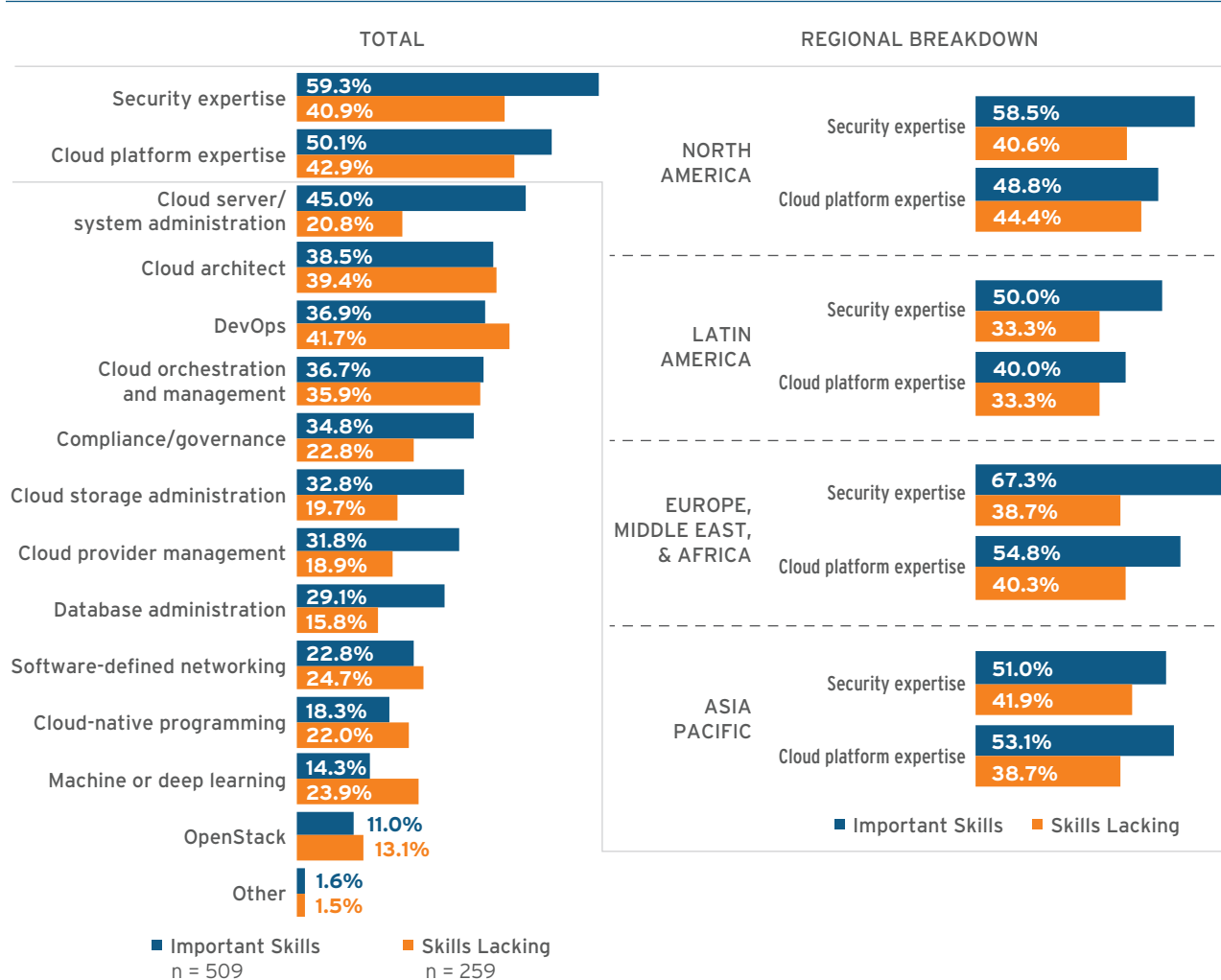
Source: 451 Research's Voice of the Enterprise, Cloud Transformation, Organizational Dynamics

In terms of subject-matter expertise, nearly 51% of Asia-Pacific companies consider security the most important skill set for the management of cloud computing environments, compared with 59% of businesses in North America and 67% in EMEA. Nevertheless, cloud platform expertise (e.g., AWS, Azure, VMware, OpenStack) is deemed the most important cloud management skill in the eyes of companies in Asia-Pacific (53%), while it sits in second place in North America at 49% and in EMEA at 55%.

The top two skills categories most lacking in regard to the management of their organizations' cloud computing environments are cloud platform expertise and DevOps (integrating the operations, software coding and quality assurance disciplines) for companies in North America. Businesses in EMEA and Asia-Pacific, meanwhile, may more likely seek remedies for insufficient expertise in security and cloud platforms, followed by the lack of cloud architects to manage the organization's cloud environment.

These survey results highlight the need for continuous advancements in cloud security, including cross-border security practices, and point to areas of required investment such as all-encompassing cloud management, application migration and DevOps. In the longer term, organizations will also require rapid ramp-ups in skills currently ranked lower in overall importance for cloud environment management, such as software-defined networking, cloud-native programming and machine learning/deep learning.
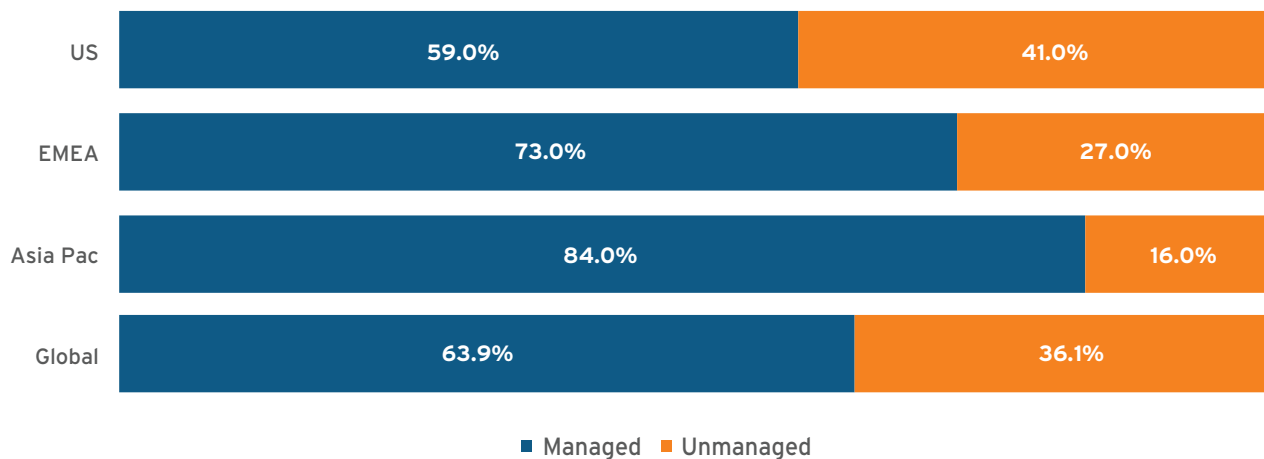
Keeping Cloud Management in Check: Fully Managed Cloud Matters

IT executives are adapting to a new role, shifting from IT being a cost center to becoming a strategic partner – both internally and externally. An IT leader of a Fortune 500 manufacturer said he finds himself spending more time engaging with line-of-business managers and technology partners, rather than monitoring systems. Preparing staff for new digital roles is now high on the priority list, according to the CIO of a global 2000 company in Europe.

From retraining and reskilling existing IT staff to hiring new personnel to address the skills gaps, larger companies for the most part make decisions led by total cost of ownership (TCO). For long-term transformation initiatives, however, there are factors such as technology innovation, industry/vendor-specific accreditation, recruitment difficulties, and ongoing support beyond TCO that can all influence why a company might choose to work with a third-party managed services provider.

Our Voice of the Enterprise: Hosting & Cloud Managed Services, Organizational Dynamics survey results point to enterprises' continued reliance on vendor-supplied management of hosted infrastructure or applications across the board (Figure 5).

Figure 5: Next Hosting and Cloud Infrastructure Engagement: Unmanaged vs. Managed

Region	Managed	Unmanaged
US	59.0%	41.0%
EMEA	73.0%	27.0%
Asia Pac	84.0%	16.0%
Global	63.9%	36.1%

■ Managed ■ Unmanaged

Source: 451 Research's Voice of the Enterprise, Hosting and Cloud Managed Services, Organizational Dynamics 2017
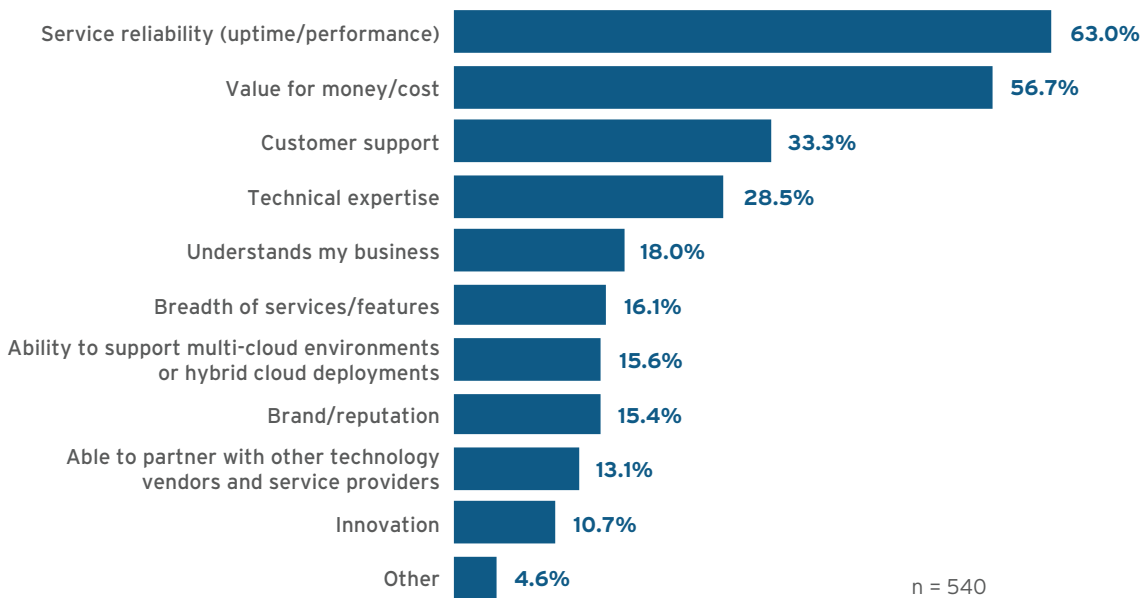
The managed services bundle is the preferred option for approximately 84% of Asian companies, followed by EMEA (73%), which also exceeds the global average of 63%. Some Asian IT executives indicate that a low IT-staff-to-user ratio is one of the reasons for choosing a fully managed solution. Organizations in the US and Europe prefer to have some level of self-service capability for workload deployment and management. Global MNCs, driven by their broad geographic distribution, are opting for cloud management tools that allow them to automate workloads across geographies as well as manage the availability and performance of IT systems and applications running in hybrid scenarios using a common user interface.

Moving up the stack, the complexity of application management and monitoring will prompt demand for more hands-on support and professional services, especially in area of application retrofitting and integration.

Partnering for Value, Yet Reliability Comes First

Among all the factors that determine the success of a company's cloud transformation strategy, none is more critical than choosing the right managed services partner. As shown in Figure 6, companies are looking for qualities in their cloud partner that strike a balance between cost and performance.

Figure 6: Key Attributes for Selecting a Managed Cloud Partner

- Service reliability (uptime/performance) — 63.0%
- Value for money/cost — 56.7%
- Customer support — 33.3%
- Technical expertise — 28.5%
- Understands my business — 18.0%
- Breadth of services/features — 16.1%
- Ability to support multi-cloud environments or hybrid cloud deployments — 15.6%
- Brand/reputation — 15.4%
- Able to partner with other technology vendors and service providers — 13.1%
- Innovation — 10.7%
- Other — 4.6%

n = 540

Source: 451 Research's Voice of the Enterprise, Hosting and Cloud Managed Services, Organizational Dynamics 2017

Further analysis of the survey results shows that in Asia-Pacific approximately 40% of companies cited solid technical expertise as one of the top three attributes for choosing a managed services partner, exceeding the global average of 28%. This was followed by customer support (32%) and brand/reputation (19%). Meanwhile, close to 40% of businesses in EMEA consider customer support one of the top three attributes when selecting a cloud partner, exceeding the global average of 33%. These results highlight the fact that enterprises in these three major regions are at different phases of IT and business transformation, which helps determine their preferences for various service qualities.
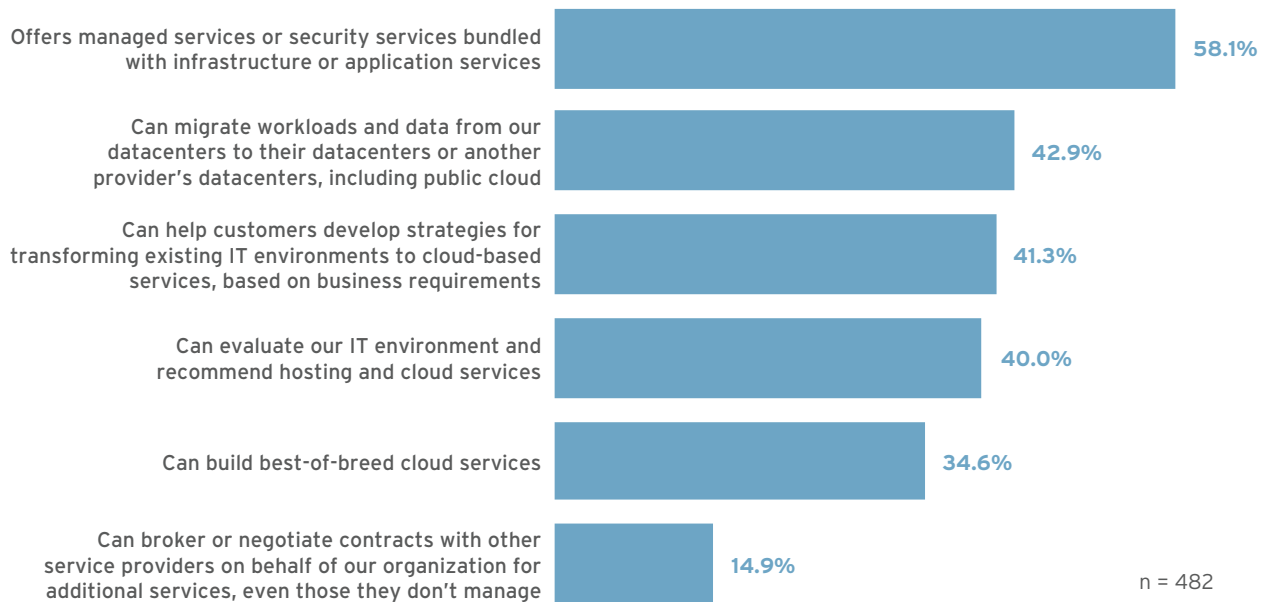
Moving live servers around and participating in service orchestration between multiple cloud environments is a challenging endeavor. As the network continues to function as a center of orchestration for cloud resources, network administrators opt for the highest level of flexibility and availability in the way network resources are provisioned. Aside from turning to partners that can provide a wide selection of access technologies – IPVPN, public Internet, LTE and 4G mobile networks –for diverse application requirements, companies demand always-on experience and enhanced features such as high-capacity connectivity, dynamic routing and analytical intelligence.

Not surprisingly, software-defined networking has generated a lot of buzz in the marketplace, with a growing number of companies running SDN pilots. The previous study of enterprise IT services strategy, *Enterprise Hybrid IT: The Role of Colocation, Cloud and Connectivity*, confirmed that business organizations generally have a moderate understanding of SDN and are aware of some perceived benefits with respect to speed, scalability, productivity and cost efficiency. We expect to see greater co-development efforts between enterprises and their service-provider partners down the road as companies look to reap the full benefits of SDN.

THREE 'MUST HAVE' CAPABILITIES FOR A MANAGED CLOUD PARTNER

Enterprises today express strong interest in getting infrastructure services bundled with management and security functions. Therefore, the richness of these offerings has become a yardstick by which businesses evaluate a prospective cloud partner's capabilities. This is illustrated by our survey findings that bundled managed services or security services tops the list of desired service-provider capabilities, with 58% of respondents citing it (see Figure 7). This top selection is followed by the ability to migrate workloads and data into service-provider datacenters or public cloud (43%), while the ability to help develop strategies for transforming IT environments ranks third (41%).

Figure 7: Must-Have Managed Cloud Capabilities

Capability	Percentage
Offers managed services or security services bundled with infrastructure or application services	58.1%
Can migrate workloads and data from our datacenters to their datacenters or another provider's datacenters, including public cloud	42.9%
Can help customers develop strategies for transforming existing IT environments to cloud-based services, based on business requirements	41.3%
Can evaluate our IT environment and recommend hosting and cloud services	40.0%
Can build best-of-breed cloud services	34.6%
Can broker or negotiate contracts with other service providers on behalf of our organization for additional services, even those they don't manage	14.9%

n = 482

Source: 451 Research's Voice of the Enterprise, Hosting and Cloud Managed Services, Organizational Dynamics 2017

Conclusion & Recommendations

The growing demand for new services, capabilities and experiences has heightened the complexity of IT operations and management. As challenging as it may sound, IT executives have come to realize that they effectively need to abandon the conventional wisdom of IT operations in order to adapt to newfound user requirements. Although business priority might vary from one region to another, IT-related expectations are becoming universal as enterprises head down the path of digital transformation. These include:

- Technology platform and network – Manageable, with interoperability
- Provisioning – Flexible, secure and visible
- Relationship – High-touch, high-tech
- Partnership – Collaborative and innovation-driven

As businesses move toward becoming digital enterprises, their ability to exploit innovative models is critical to a successful transformation. To that end, the CIO's new mandate is to become a technology innovator and an accelerator. In order to capitalize on the next wave of technologies – artificial intelligence, machine learning, blockchain, IoT and advanced analytics – IT leaders must invest in building hybrid mastery.

RECOMMENDATIONS

- **Be ready to ask tough questions about workload portability and cloud interoperability.** Understand how flexible your cloud partner will be in terms of workload migration to other third-party clouds and the level of support and guarantee available for moving workloads back to your own IT environment if needed.
- **Invest strategically in bridging the skills gap for hybrid deployments.** This can be done by tapping into an ecosystem of cloud vendors – it also provides excellent justification for collaborative innovation.
- **Develop a realistic timetable for adopting a fully managed approach to IT transformation.** It's advisable to get all business unit leaders to sign off on the timetable for planning a successful transition. This includes achieving major milestones in business process reengineering as well as staff training.
- **Work with a partner that can deliver a cohesive network-enabled cloud strategy.** Aside from facilitating collaboration between network and IT teams to set the transformation process in motion, getting the right partner to bring to fruition a smart network that is workload-aware and user-centric is strategically important.

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