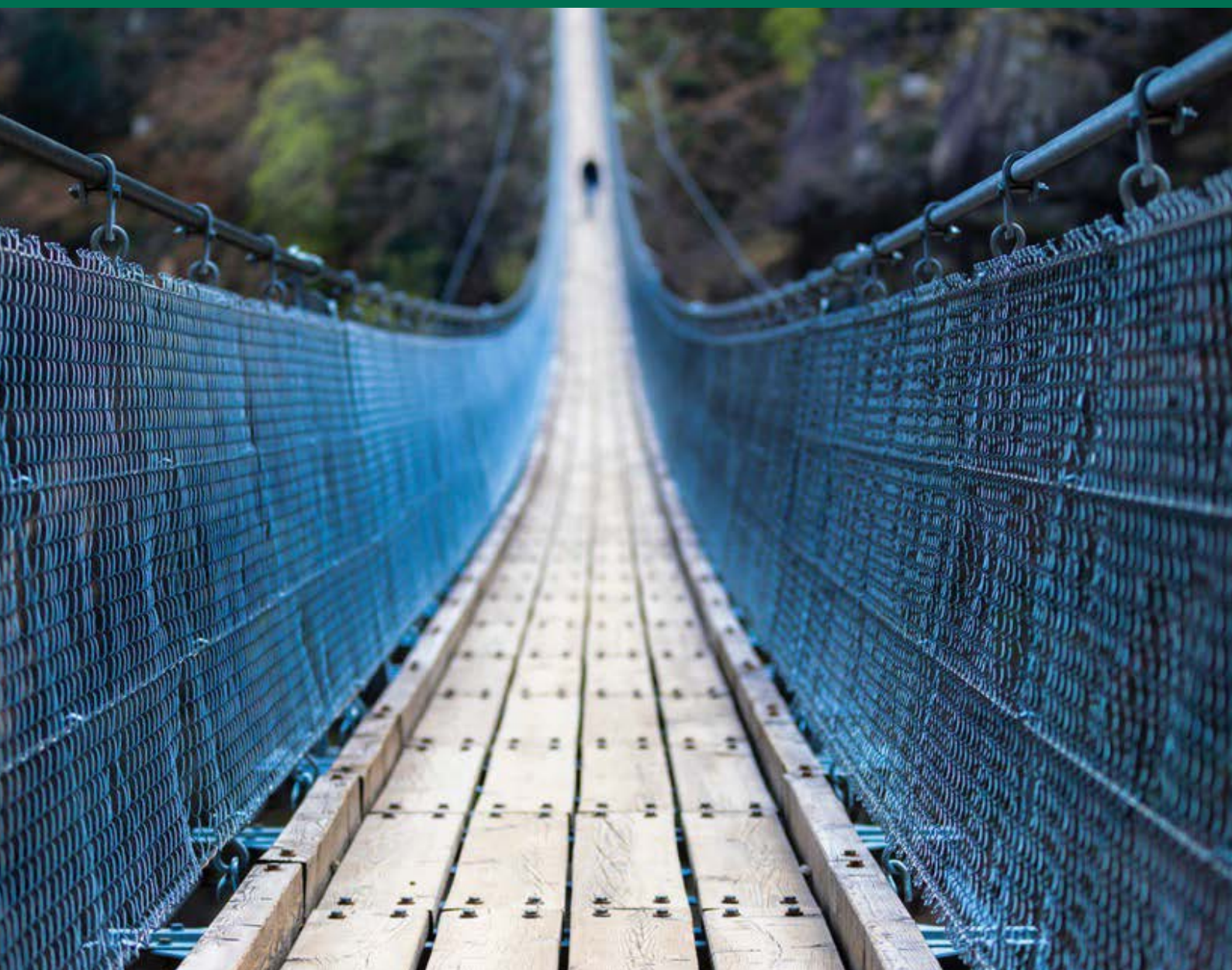
BCG | aws

Businesses in Asia-Pacific Can Find Resilience and Growth in the Cloud



Boston Consulting Group partners with leaders in business and society to tackle their most important challenges and capture their greatest opportunities. BCG was the pioneer in business strategy when it was founded in 1963. Today, we help clients with total transformation—inspiring complex change, enabling organizations to grow, building competitive advantage, and driving bottom-line impact.

To succeed, organizations must blend digital and human capabilities. Our diverse, global teams bring deep industry and functional expertise and a range of perspectives to spark change. BCG delivers solutions through leading-edge management consulting along with technology and design, corporate and digital ventures—and business purpose. We work in a uniquely collaborative model across the firm and throughout all levels of the client organization, generating results that allow our clients to thrive.

For almost 14 years, Amazon Web Services has been the world's most comprehensive and broadly adopted cloud platform. AWS offers over 175 fully featured services for compute, storage, databases, networking, analytics, robotics, machine learning and artificial intelligence (AI), Internet of Things (IoT), mobile, security, hybrid, virtual and augmented reality (VR and AR), media, and application development, deployment, and management from 69 Availability Zones (AZs) within 22 geographic regions, with announced plans for 16 more Availability Zones and five more AWS Regions in Indonesia, Italy, Japan, South Africa, and Spain. Millions of customers—including the fastest-growing startups, largest enterprises, and leading government agencies—trust AWS to power their infrastructure, become more agile, and lower costs. To learn more about AWS, visit aws.amazon.com.

For more information, contact AWS-BCG-APJ@amazon.com.

Businesses in Asia-Pacific Can Find Resilience and Growth in the Cloud

Luc Grimond and Alain Schneuwly

May 2020

AT A GLANCE

Spending on the public cloud and related services is growing at a CAGR of 25% across Asia-Pacific, faster than in the US and Western Europe. Cloud outlays account for about 5% of the average IT budget, and that figure is likely to double by 2023.

Cost Savings are No Longer the Key Driver

Business leaders believe that cloud adoption can unlock strategic value in ways that go well beyond cost savings. A majority of APAC executives say that they are pursuing cloud initiatives to accelerate innovation and reduce operational risks. The COVID-19 pandemic will make doing so crucial.

Strategic Misalignment and Operational Gaps Are Hindering Growth

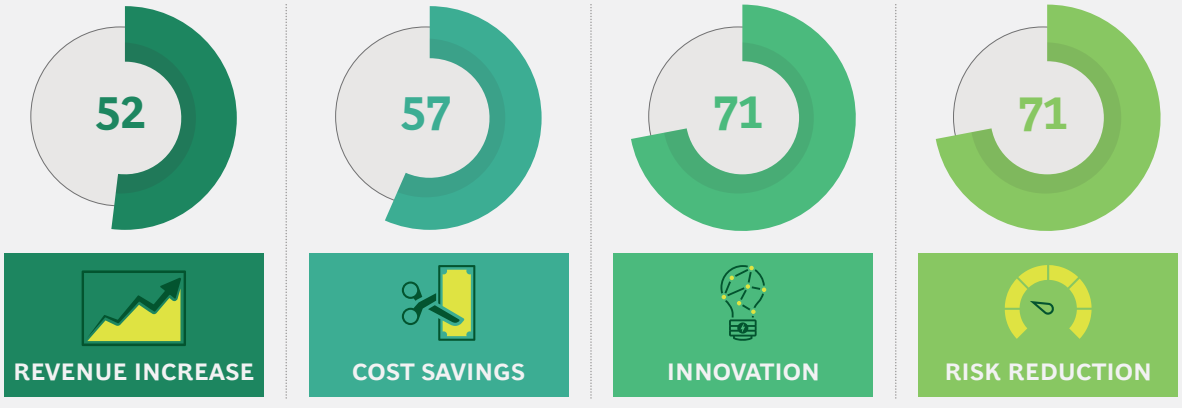
To capture the full potential of the cloud and manage in the current and post-COVID-19 pandemic, companies need to anchor initiatives on clear business goals, establish a cloud operating model, acquire needed talent, and forge strategic partnerships.

Although businesses across Asia-Pacific (APAC) are eager to embrace the cloud, foundational gaps have slowed adoption and reduced the overall business value. Weak alignment between business and IT, talent gaps, and ill-defined processes are among the barriers hindering cloud-based innovation and growth across the region.

These are among the findings of an eight-nation study from Boston Consulting Group and Amazon Web Services conducted in 2019 that focused on Australia, India, Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam. The study also included in-depth interviews by BCG with senior executives from the financial services, energy, industrial goods, and retail sectors.

The COVID-19 pandemic will make it more urgent for business leaders across APAC to increase their rate of cloud adoption. As companies shift more workers to virtual environments and employ end-user computing, many are rushing to roll out essential collaboration tools. To reduce vulnerabilities, they must move from ad hoc applications to the more secure environment of the cloud. Likewise, restrictions around workplace access could make it difficult for companies to staff and manage their infrastructure and data centers effectively. These pressures, combined with

Exhibit 1 | APAC Executives See Innovation and Risk Reduction as Major Drivers of Cloud Adoption



PERCENTAGE OF RESPONDENTS WHO AGREE THAT THE AREA IS A DRIVER OF THEIR CLOUD STRATEGY

Source: BCG and AWS Executive Cloud Survey, 2019.

the need to prepare for a post-COVID return to growth, require businesses to close the foundational gaps that have hindered cloud use to date.

APAC Businesses See the Cloud as a Growth Enabler

Despite growing interest in the cloud, many APAC companies are failing to get the full benefit from their investment.

While cost savings have been a traditional driver of cloud adoption, a large majority of survey respondents in APAC said that they are pursuing the cloud as a way to propel growth. More than 70% of executives surveyed indicated that they believe the cloud will help them innovate faster and lower implementation and operational risks. (See Exhibit 1.) BCG experience suggests that by migrating to the cloud, large enterprises are often able to bring out services 30% to 60% faster, compared with creating bespoke in-house infrastructure. The chief technology officer of a leading Australian oil and gas company said, "Our innovation mantra is to think big, prototype small, and scale fast. And the cloud has really helped us do that."

Spending patterns back up this sentiment. From 2016 through 2018, APAC businesses have increased their cloud spending from 3% of their IT budgets to 5%. Spending on the public cloud and related services is growing at a compound annual rate of 25% across APAC. By 2023, cloud spending is expected to make up 10% of the average IT budget. As one Philippine industrial goods executive stated, "Our strategy is 'cloud first' before anything. Our cloud investments will significantly increase in the next three years." The economic impact is also likely to be substantial. A BCG study found that growth in the public cloud could contribute to a total economic impact of more than US$450 billion across six major markets in APAC (Australia, India, Indonesia, Japan, Singapore, and South Korea) from 2019 through 2023.

Another catalyst for investment is the ability to access best-in-class digital capabilities. For example, an Australian airline was able to save US$40 million in annual fuel costs by using cloud-based analytics to simulate tens of thousands of flight patterns and create more efficient routes. The company's CIO said, "We were able to spin up approximately 4,000 CPUs, run the analysis, and then spin use back down to nothing."

Cost savings, though not the primary catalyst for cloud adoption, are still an important part of the business case for many executives. A technology leader at a Singaporean financial services firm told us, "While our main drivers are risk reduction and the ability to provide better service to our business stakeholders, we also realize cost efficiencies due to pay-per-use models where we can scale up during peak usage." Similarly, an Indian financial services group moved its IT infrastructure to the cloud in an effort to achieve significant cost savings along with the ability to deliver personalization at scale and develop new services.

Companies Lag in Organizational Readiness

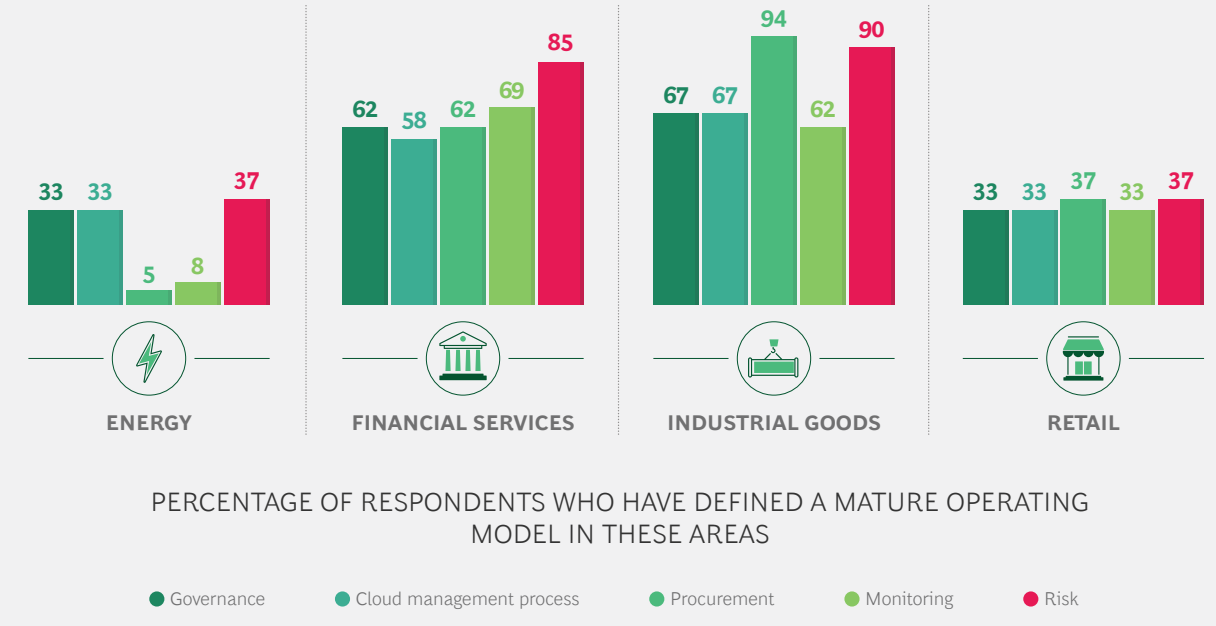
Despite growing interest in the cloud, many APAC companies are failing to get the full benefit from their investment. Only 20% of respondents have migrated a majority of their applications to the cloud, and less than 25% of business applications are cloud ready. The slow adoption is diluting returns and forcing businesses to maintain on-premise legacy infrastructure in order to run their operations.

More than 75% of respondents said that weak alignment between business and IT is a major barrier to scaling the cloud. Although business leaders may be in favor of the vision, they may not fully understand the resources needed to support cloud deployment and use because they are not closely engaged in the planning. As a technology leader at a financial services company in Singapore remarked, "While business leaders understand the benefits of the cloud, getting buy-in and funding for specific initiatives is difficult." Overall, 40% of companies said their cloud program lacked a clearly defined business stakeholder. "Top-level support from business units is the biggest challenge," said an executive at a Philippine producer of industrial goods.

In addition, few organizations outside of the financial services and industrial goods industries have adapted their monitoring, procurement, and risk practices for the cloud. (See Exhibit 2.) Governance also remains fragmented. Without a cohesive cloud operating model, it becomes far more difficult for companies to integrate cloud capabilities into the core business and deliver sustainable outcomes. Half of all survey respondents indicated that process weaknesses are a barrier to adoption. These weaknesses also prevent companies from taking advantage of the centralized provisioning and dynamic scaling that the cloud offers.

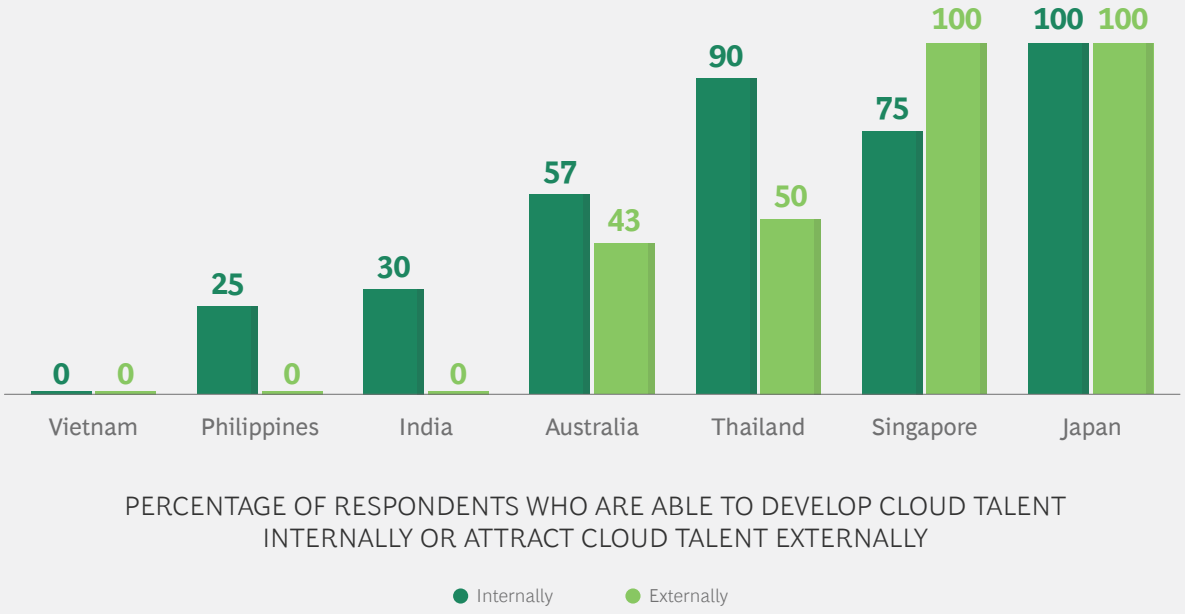
Moreover, many organizations lack the cloud expertise that could help their initiatives get off the ground quickly. Effective use of the cloud requires IT skills that are in high demand, such as engineering and coding, as well as specialists to design and implement business-focused use cases. The skills gap is most pronounced in

EXHIBIT 2 | Financial Services and Industrial Goods Have the Most Mature Cloud Operating Models



Source: BCG and AWS Executive Cloud Survey, 2019.

EXHIBIT 3 | In Emerging Economies, Filling Talent Gaps Requires a Mix of Internal and External Training and Support



Source: BCG and AWS Executive Cloud Survey, 2019.

Vietnam, the Philippines, and India. (See Exhibit 3.) "Our top challenge is bringing in the right talent," said a technology leader at an Indian bank. Given the difficulty of attracting outside hires, 55% of respondents indicated that they are focusing on reskilling their staff. Although this is a useful step, retraining exercises can slow the rate of cloud adoption if they're not augmented by outside support.

The lack of expertise also makes it harder for companies to work effectively with their cloud providers. Businesses may not know what types of help to ask for and may not understand typical cloud spending or budget norms.

Complexity is yet another challenge. Approximately 65% of respondents said that they currently have hybrid-cloud deployments that use public and on-premise clouds and employ two common models, infrastructure as a service (IaaS) and software as a service (SaaS) operating models. Early-stage cloud adopters can struggle with the learning curve of managing both on-premise and public-cloud platforms.

Security awareness has also created uncertainty. In some countries, organizations are still awaiting the completion of regulatory assessments governing data privacy and security protection. Companies may also be unaware of the security capabilities offered by their cloud providers. As a result of cybersecurity concerns, approximately 45% of respondents said that they do not host specific data on the public cloud.

EXHIBIT 4 | There Are Four Stages of Cloud Maturity

	NASCENT	EMERGING	MANAGED	SELF-OPTIMIZING
VISION AND ALIGNMENT	Cost-driven business case	Executive sponsor in tech	Comprehensive business case, executive sponsors in business	Aligned to business objectives, on CEO agenda
MIGRATION PATH	Rehosting	Retire and repurchase, clear design principles	Refactor and reengineer	Multiple migration paths, new builds cloud native
OPERATING MODEL	No defined operating model for cloud	Defined operating model, processes, roles, and responsibilities	Strategic partnerships with cloud service providers	Center of excellence for cloud technology
SKILLS AND LEADERSHIP	Limited capabilities for cloud, no talent strategy	Cloud skills framework, training, and hiring strategy	Highly skilled cloud experts in-house, external network	Cloud skills part of career development for business and technology
SECURITY	Limited cyber and cloud security awareness	Cyber and cloud security in place with manual controls	Automated controls, identity and access management in place	Cyber and cloud security part of CEO agenda
TECHNOLOGY	Cloud tactically provisioned on an exception basis	Initial strategic workloads hosted on a cloud provider	A majority of workloads migrated across a couple of cloud providers	IT infrastructure almost entirely cloud based

Source: BCG and AWS Executive Cloud Survey, 2019.

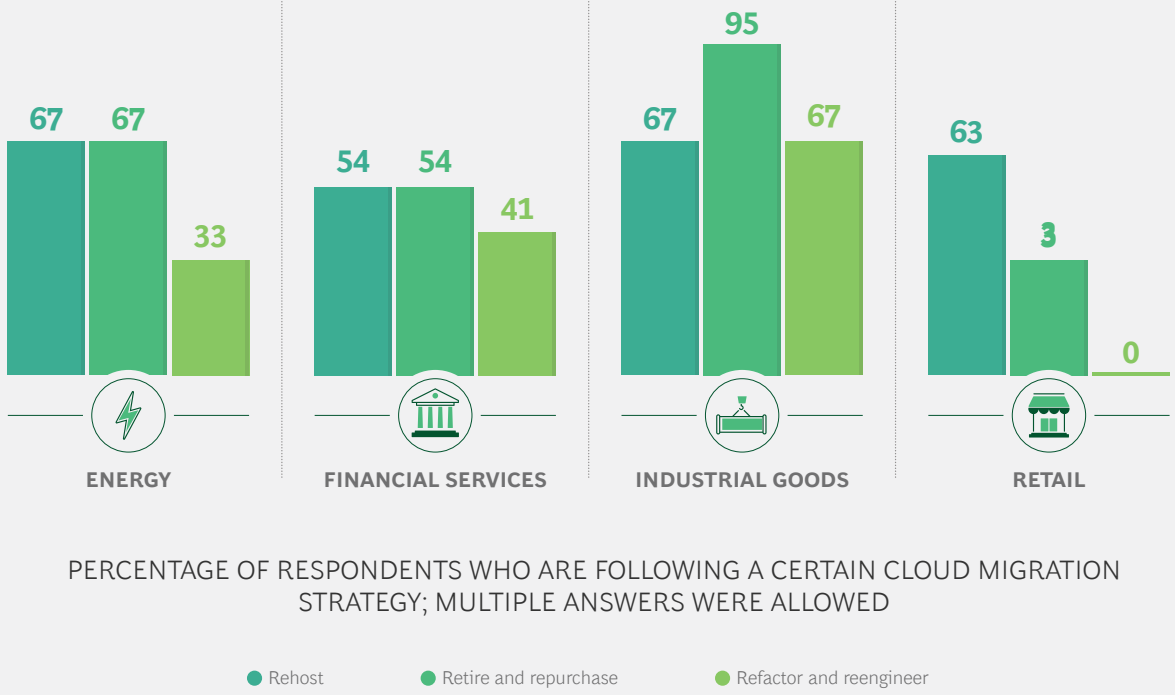
Follow Six Steps to Accelerate Cloud Adoption and Increase ROI

As with any technology, cloud adoption has a learning and maturity curve. (See Exhibit 4.) Survey data suggests that most APAC respondents are in the nascent and emerging stages. To move up the maturity curve and maximize the value of the cloud, they should prioritize the following actions.

Align ownership and business outcomes. Most APAC companies are in the emerging category when it comes to vision and alignment. Although they have identified technology sponsors, they need to create joint ownership between the business and technology stakeholders and design a cloud program that supports strategic business outcomes. Many leading cloud vendors have developed playbooks for industry-specific scenarios that have been tested and applied in the field. Following these playbooks can help companies gain quick wins in their cloud deployments.

Early successes can establish support for more ambitious cloud-based initiatives. For example, a pilot exercise that helped an Australian bank differentiate a signature product paved the way for bigger initiatives, with the full support of the bank's senior leadership team. Once an initiative has proved its potential, businesses then need to expand the rollout more broadly. A joint business and IT planning team should meet to align strategy, prioritize budgets, identify the right cloud partners, and set metrics that support the desired business outcomes.

EXHIBIT 5 | The Most Popular Migration Strategies Are Rehosting and Retiring and Repurchasing



Source: BCG and AWS Executive Cloud Survey, 2019.

Determine the optimal migration path. Although APAC businesses use a mix of various migration approaches, many lean toward basic rehosting or retiring and repurchasing methods. (See Exhibit 5.) Selective refactoring and reengineering can boost overall returns in some cases. For example, when an Australian industrial goods firm decided to transfer its SAP system to a cloud provider, the design team first refactored the company's customer layer to make it cloud native. Doing this allowed the business to more easily update the customer layer and experiment with different features and innovations. Companies should design their migration approach according to the value of the underlying workload. Cloud providers can help their customers with this portfolio analysis and work with them to design a multiyear migration plan. The three most popular migration strategies are to:

- **Rehost.** This approach, also known as "lift and shift," is the easiest to employ. It simply rehosts applications in the new environment with minimal changes. Although this strategy is quick and cost-effective, the benefits are easy for competitors to match. As such, this approach is best suited to low-value applications.

- **Retire and repurchase.** Also known as "drop and shop" in industry parlance, this approach identifies opportunities within the existing application environ-

ment to replace on-premise services with superior SaaS alternatives. Although more time-consuming to set up than a rehosting arrangement, drop and shop can give companies access to enterprise-grade solutions at scale, such as in customer relationship management and data warehousing, where easy deployments, painless upgrades, and stability are crucial.

- **Refactor and reengineer.** Companies that need specialized features or more-differentiating capabilities may choose to redesign the architecture of their applications using cloud-native application features, such as automatic load balancing, autoscaling, and serverless technologies. Reengineering a monolithic application into microservices, for instance, can lower the total cost of ownership and speed innovation. Although refactoring is the most expensive option initially, it can help businesses gain greater cost, performance, and customer benefits in the long run. "Cloud-native functionality is critical to our transformation, giving us far more flexibility, empowering us to move much faster, and allowing us to rapidly scale as we expand our use of cloud technologies," said a technology leader at an Australian bank.

Define a target cloud operating model. Nascent adopters typically manage their cloud environments within their existing technology and process infrastructure. As they gain more experience, mature adopters often shift to a center of excellence (COE) approach. Centralized management can help organizations adapt service, governance, finance, and procurement processes to the specific operating, regulatory, and risk management context of the cloud. For example, a financial institution in Singapore found that a COE structure allowed it to fast-track cloud-native development, improve cyber risk oversight, and build engineering skills more quickly. Budgeting processes can also take advantage of the cloud's standardized pricing models to streamline reporting and improve demand forecasting.

Organizations are under increased pressure to create integrated processes that support remote-working conditions.

The demands of the COVID-19 pandemic make the need for centralization all the more acute. Organizations are under increased pressure to create integrated processes that support remote-working conditions. Creating a COE could help speed that transition, allowing organizations to streamline procurement and adopt innovative third-party solutions more efficiently (rather than in a fragmented fashion across functions) and secure these environments more effectively with standardized protocols and governance.

Working with the right strategic cloud provider can help businesses establish their target cloud operating model more quickly. The head of transformation at a Philippine telecom operator stated, "We are still new at this, so it's critical that we are given guidance in terms of how to go about our digital transformation journey. We work closely with our cloud provider to learn from them and improve our cloud operating model."

Create a strategy that combines internal and external talent. While nascent companies often focus solely on engineering talent, the most successful cloud transformations create a well-rounded talent plan that includes a variety of skills in project management, change management, user experience design, infrastructure engi-

neering, coding, and serverless technology. Filling skills gaps in a competitive talent market requires leveraging both internal and external resources. Companies should identify employees whose backgrounds lend themselves to working with the cloud, such as those with complementary skill sets who can be trained and redeployed into new cloud roles fairly easily. Businesses also need to adapt roles and responsibilities. With the transition to cloud-based services, some positions may no longer be needed, while others may require a redesign.

Since the COVID-19 pandemic began, the number of cyber attacks on companies globally has risen exponentially.

In the near term, bringing in experienced external cloud coaches to lead training and deployment can help, although companies must ensure that they develop their own institutional knowledge as well. Codifying cloud skills at the end of the training can help make sure that the knowledge has been captured and transferred. One Philippine financial institution conducted a workforce assessment that identified existing cloud talent within its organization as well as employees who had complementary skills. Engineers whose background spanned operating systems, storage, network, and virtualization were natural candidates. The company then partnered with its cloud provider to lead the cloud transformation and accelerate the skills development. This approach helped the company speed deployment and deliver on its strategic objectives.

Rethink cybersecurity for the cloud. Many nascent businesses still rely on conventional security controls to manage their cloud environments, but these don't provide the necessary safeguards. Mapping out rules and requirements ahead of time is crucial. One executive at a Singaporean financial institution said, "People are biased toward hardware security because it is tangible. We need to assure people that even if the cloud-based hardware is not under their control, it is more secure than the same hardware on premise."

With more employees working remotely, companies have moved aggressively to establish virtual work environments. The pressure to move quickly, however, means many businesses are deploying tools that lack adequate data management protections or that are not adapted to existing security processes. As a result, businesses may be exposed to massive security vulnerabilities. Since the COVID-19 pandemic began, for example, the number of cyber attacks on companies globally has risen exponentially as malicious actors introduce new attack vectors, such as the "Co-VID-19" phishing scam. Companies need to review their existing data protection model and security controls to enable fast adoption of cloud-based systems. Accelerating the shift to the cloud would allow businesses to provide remote environments that maintain appropriate data security.

Many advanced cyber solutions exist to help organizations boost their security posture. For example, an Australian bank deployed a fully managed intelligent threat detection service that continuously monitors account activity for malicious or unauthorized behavior to help protect cloud workloads and safeguard customer data. Many cloud providers also embed sophisticated security protections, such as automated security controls and access provisioning, into their offerings. A financial-underwriting company in India found that the cloud security offered by its public-cloud operator included several audit-friendly features that could help the company meet a number of payment, security, and technical compliance standards.

Future-proof your technology architecture. Designing a technology architecture on a cloud-first and cloud-native basis can help businesses respond to customer demand quicker and reduce the risk of obsolescence. Through cloud platforms, organizations can easily build and deploy applications using serverless or container-based technology, both of which enable rapid improvement or replacement of application components. Cloud platforms also help companies balance and scale infrastructure in response to customer demands, giving them necessary flexibility and reducing the need for costly hardware investments.

Finally, use of the cloud in combination with edge computing allows companies to provision hardware dynamically in close proximity to their end customers, improving latency in a cost-effective way. A senior executive at an Australian industrial goods manufacturer said, "Going cloud native and cloud first for our customer architecture helps us better anticipate and respond to customer needs. By using edge computing and autoscaling, we have significantly increased application performance without the need for costly data centers close to customer locations."

To make the most of these future-proofing cloud technologies, businesses should define clear policies on workload allocation, such as which workloads should be delivered using less expensive spot instances and which should be executed using dedicated, high-throughput machines. Standardized guidance can reduce guesswork and waste and help to ensure appropriate service levels. Governance frameworks should also include ongoing monitoring of workloads and agreed-upon procedures for responding to monitoring signals. Finally, businesses need to establish architecture standards and implementation guidelines for using containers and serverless technology. Creating clear policies can help to manage risk and ensure that companies retain choice when it comes to using different platforms, technologies, and vendors.

The shift to a remote workforce and heightened need for collaboration prompted by the COVID-19 pandemic have made the case for cloud adoption even more clear. Success requires laying the right groundwork. To avoid overreaching, we recommend that companies begin their cloud adoption by focusing on a handful of high-value pilot initiatives and migrating a small number of applications. As capabilities mature and leaders develop a better understanding of potential use cases, companies can take on a more ambitious portfolio. Selecting compatible cloud partners that are eager to collaborate on learning and building communities of expertise is crucial. Organizations that marry their enthusiasm for cloud-based services with a commitment to put the right operational elements in place have the potential to transform their business and significantly outperform their peers.

About the Authors

Luc Grimond is a managing director and partner in the Singapore office of Boston Consulting Group and a member of the Technology Advantage practice. You may contact him by email at grimond.luc@bcg.com.

Alain Schneuwly is a managing director at BCG Platinion in the firm's Singapore office. You may contact him by email at schneuwly.alain@bcg.com.

Acknowledgments

The authors are grateful to Amazon Web Services for their thoughtful insights and strong collaboration. They also thank Marie Glenn for writing assistance and Meghan Huff for marketing support. In addition, they are grateful to Katherine Andrews, Siobhan Donovan, Kim Friedman, Abby Garland, and Shannon Nardi for editorial and production assistance.

For Further Contact

If you would like to discuss this report, please contact one of the authors.