Cloud progam elements of success
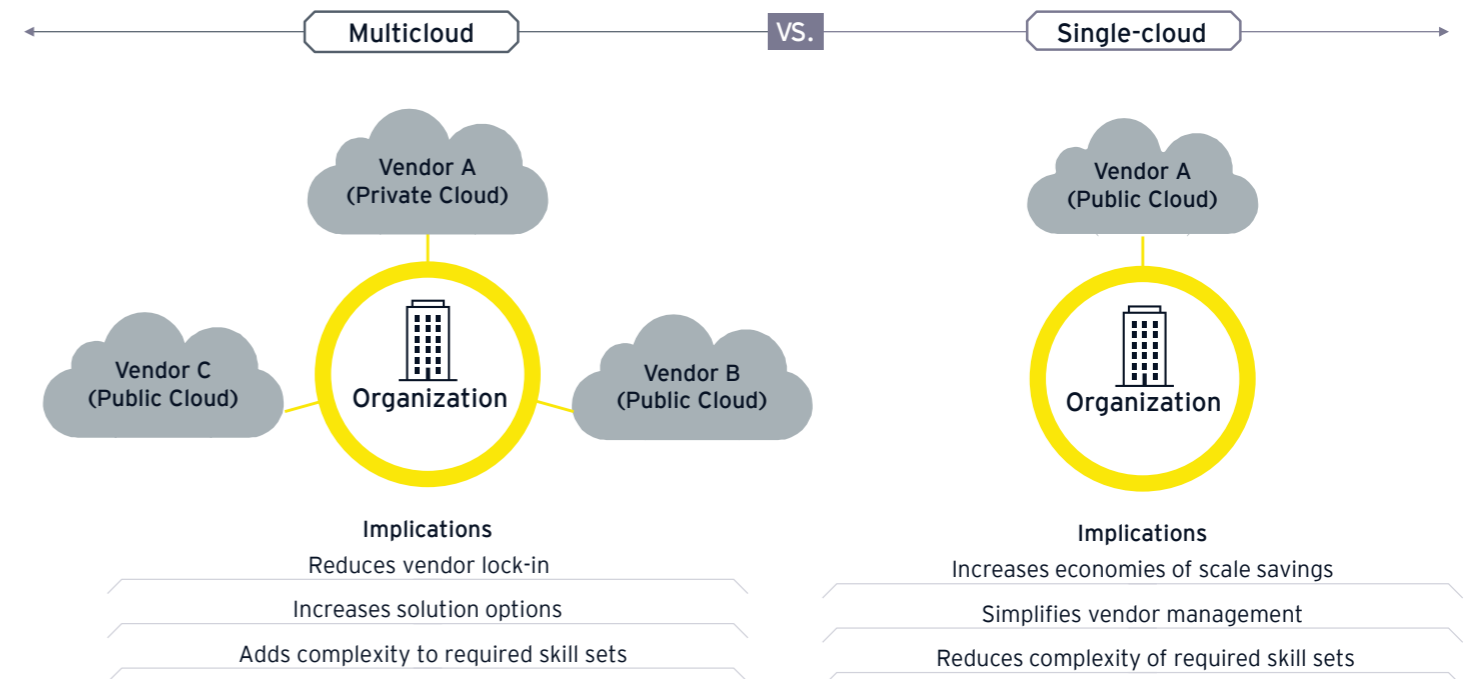
EY

Building a better working world

Introduction

We are often asked to assist organizations with failing cloud programs. These programs have been created with the expectation of rapid implementation and immediate cost savings. Unfortunately, this effort does not always yield expected results, since misses and gaps result in extended timelines, increased costs and unforeseen risks. This paper is intended as a general introduction to several leading practices that we have identified in successful cloud programs. While this high-level view provides a great starting point for organizations wishing to familiarize themselves with these concepts, extensive investigative articles can elaborate and guide execution on each practice discussed here.

Key elements: the road to success

Cloud strategy

As an initial step in an organization's cloud journey, it is important to commit to a company-wide cloud strategy in order to ensure long-term success. Because no one-size-fits-all approach exists for making this set of decisions, choosing a viable enterprise cloud strategy is a complex and often daunting process. For example, the organization's strategy must choose between use of a single cloud vs. multiple clouds and between various approaches on architecting and deploying applications into the cloud(s).

| Multicloud | VS. | Single-cloud |

Vendor A (Private Cloud)

Vendor C (Public Cloud) — Organization — Vendor B (Public Cloud)

Vendor A (Public Cloud)

Organization

Implications
Reduces vendor lock-in
Increases solution options
Adds complexity to required skill sets

Implications
Increases economies of scale savings
Simplifies vendor management
Reduces complexity of required skill sets

Multicloud vs. single-cloud is one of the first strategies to be defined. Benefits of a single-cloud approach include cost savings associated with economies of scale, ease of solution management through a single vendor, and reduction in complexity and skills requirements within the organization. A significant downside of this approach is the potential for cloud vendor lock-in (generally requiring higher levels of trust and therefore added scrutiny during the platform selection process). By contrast, a multicloud solution enables the organization to pick and choose hyperscale platforms and services that best fit the organization's unique requirements while reducing exposure to vendor lock-in. However, this approach may increase complexity for solutions/integrations and may require a broader skill set base for the organization to manage.

Of equal importance, the organization's cloud strategy provides a mechanism for selecting the appropriate mix of migrating existing on-premises applications to the cloud vs. modernizing to cloud native (hosting new solutions created specifically for the cloud) solutions. Cloud native is usually the recommended preferred path, since experience has shown this to deliver greater value over time to the organization.

There are multiple factors to be considered in determining which cloud and development methods are appropriate for a workload. Considerations may include focus on data domains/data gravity concepts in a single cloud (HR data in vendor A, Finance in vendor B, etc.) or choosing a specific multicloud model (50/50 placement, champion/challenger 80/20, etc.); all outcomes should include driving toward these goals with a full understanding of financial commitments from the vendors and the necessary skills mix within infrastructure/developer teams that is required to deliver. We advise our clients not to focus too much on the technical differences between the providers for cloud placement decisions because the providers tend to leapfrog each other. Our point of view is that, while there are technical differences between the hyperscale providers, these differences are ephemeral. Whatever direction the company chooses, the strategy must be well documented, as well as communicated often and publicly.

Knowledge of the current IT landscape

While preparing for a cloud migration/modernization program, successful organizations also begin with development of an in-depth understanding of the current on-premises IT environment. This requires proper documentation and detailed knowledge of applications. Organizations armed with this information not only reduce the long-term risk of failed migrations, but they also often accelerate the migration timeline.

Application dependency mapping will allow the organization to plan migration/modernization timelines accurately, ensuring that tightly coupled and interdependent components move together. Failure to do so may result in business disruption (due to performance or functional issues that arise from the incomplete migration of a given application) or in unrealized cost savings (for example, multiple applications hosted on the same server). A Configuration Management Database (CMDB) or other technology management tool provides a good place to start when evaluating the current IT landscape. Unfortunately, many businesses do not possess this kind of standardized data repository, and implementing one would be a major project in and of itself. If a CMDB is not available, the organization can utilize one of the many tools available in the marketplace that identify application dependencies through automatic discovery.

We have seen many of these investigative efforts fail when utilizing a big-bang style, all-in-one approach to discovery and dependency mapping. Attempting to complete discovery for all applications prior to starting any migrations can be extremely time-consuming and delay potential quick-win migrations. Additionally, because applications will be updated and continue to change over time, rework may be required closer to the application's migration date. As an alternative, we recommend performing application discovery in an agile fashion. Discovery activities should be maintained as migrations occur, allowing simpler applications to migrate quickly while simultaneously working through an extended discovery process for more complex applications.

The organization should also create and measure a robust set of baseline metrics for utilization and performance. During the initial migration/modernization phases, these metrics provide a better understanding of how apps will perform in the cloud, identify issues that must be resolved prior to migration and allow the business to make better informed decisions about cloud design. As migration proceeds, these metrics will serve as a reference point to troubleshoot problem areas and to compare utilization, server performance, application availability, end-user latency, and other key performance indicators between on-premises and the cloud. Having accurate baseline metrics will also help the organization measure the overall success of the cloud migration/modernization program. Success should show improvement from the initial on-premises baseline to the post-migration cloud metrics.

Business buy-in

Business buy-in and a joint IT/business prioritization process constitute two of the main characteristics of successful cloud migrations. Given the expectations to deliver for the business, cloud migration/modernization discussions should involve business leadership from Day 1. Although IT leaders quickly appreciate the potential transformational nature of transitioning to the cloud, the organizations best poised for success are those where IT leaders work with their business partners to explain not only the transformational benefits, but also the time, level of effort, financial investment, risks and possible process impacts associated with the cloud migration/modernization.

Product expectations, requested projects, resourcing and funding for IT divisions all tie directly to business targets. Transforming a division permanently alters ways of work and therefore adjusts the products that the division produces and how it produces them. By understanding the strategic cloud transformation that the organization's IT divisions are undergoing, the business will be prepared when its IT partners begin to deliver different products. Furthermore, by including the cloud migration within its project prioritization, the business will know, and be prepared, to support the costs and business impacts of the migration as they occur. Where possible, the business will also table or postpone competing business requests. However, if a migration is not treated as a priority, there must at least be alignment on a feasible timeline for the migration. Misalignment on priorities and the timeline for completing the migration can result in missed target dates, which often lead to overspend.

The support that the business provides to its internal IT organization can enable a cloud migration, but the lack of IT/business alignment on strategic alliances with other corporations (software providers, cloud vendors, etc.) can negatively impact the migration. In order to migrate to the cloud, an organization should engage an outside vendor to provide a cloud platform, as well as to support the actual migration. External vendors will possess the mature skill sets and processes required to complete a migration: skills that are costly to build up and unnecessary for a company following the completion of its cloud migration. Each vendor holds its own benefits and risks, many of which may be overlooked in favor of examining financial terms and other forms of partnerships that the business can form with the vendor. If the selection of a cloud provider is significantly influenced by costs and other partnerships without considering the functional needs of the IT divisions, not only will the migration be in jeopardy, but so will the long-term success of the IT divisions. The transition to the cloud is not temporary, nor does it end with the migration. In fact, the migration is simply the beginning. Conducting the migration with the right vendors will shape the long-term success of an IT division and potentially limit the need for corrective efforts and costs down the road.

Significant business engagement in the end-to-end cloud transformation process will help the organization generate significant value. Together, IT and the business can work to extract maximum value from the investment by avoiding the pitfalls of missed migration dates, higher double-run costs, overworked resources and wasted opportunities.
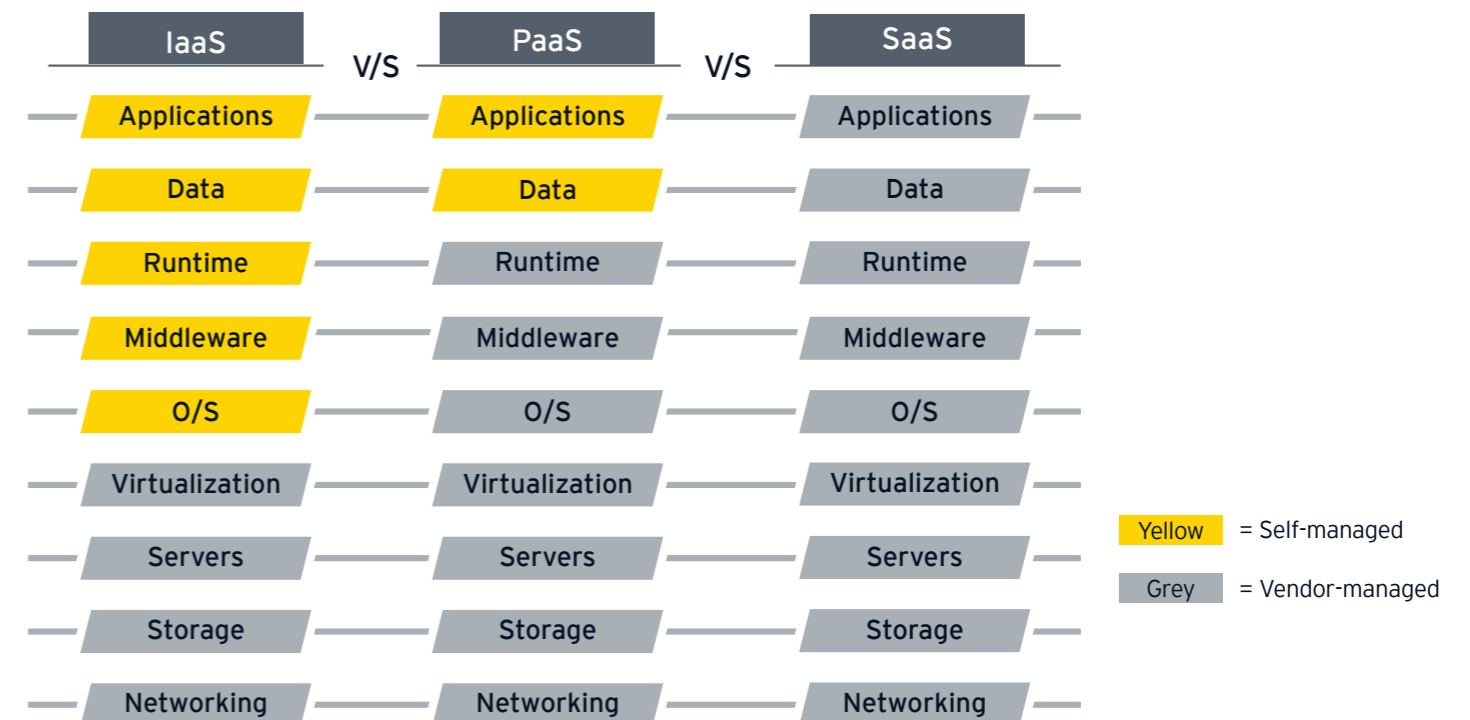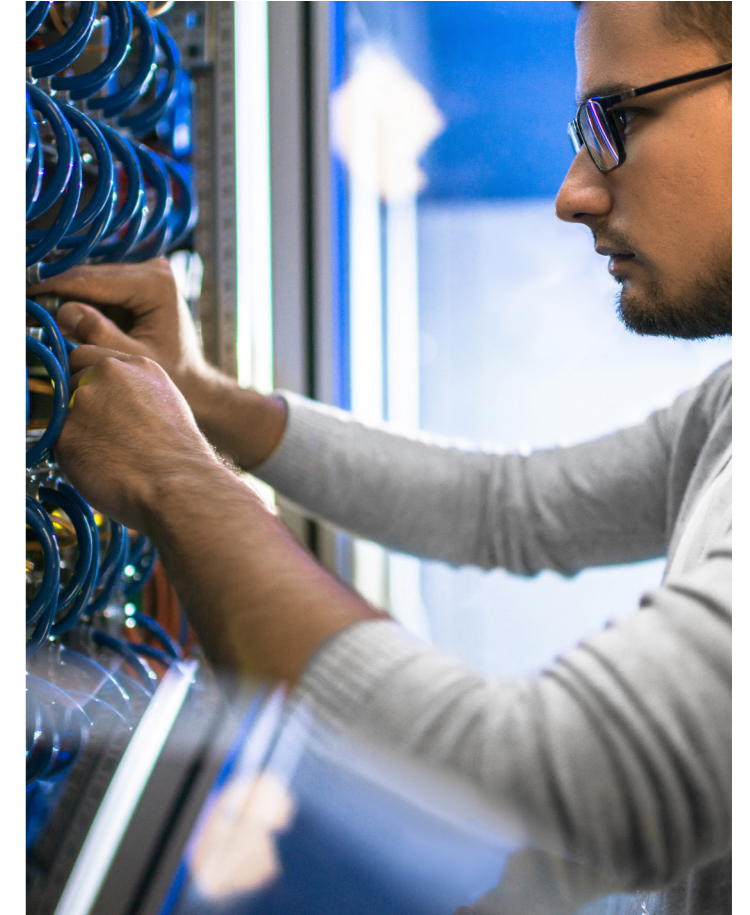
Cloud foundations

Building a cloud foundation that aligns with business goals and needs is critical for both the short-term and long-term success of cloud transformation programs. Many technology decisions must be made while setting up the foundations for the chosen cloud platform. When making these decisions, it can be easy to lose sight of the organization's business objectives. Instituting a scaffolding and decision framework ahead of designing the foundations will help maintain coordination and synchronicity between the business and IT. Missing this key step can lead to significant misalignment within the organization, most likely creating unnecessary rework and putting the organization at risk across many business units. Multiple foundational areas (too many to be considered in this paper alone) exist that need to be aligned within the business. Securing the business's alignment should stem from consistent communication on the need for ever-evolving foundations. Rather than developing foundations via one up-front effort, the development of foundations should be an iterative process that occurs whenever a new pattern, service or control is required. The following briefly examines the crucial areas of IT Services and Security.

Successful cloud programs will implement a decision framework for choosing the right IT service model. Development of this framework will be important to complete in the initial stages of the cloud program to ensure consistency, as well as optimal benefits realization, as the organization progresses through its cloud journey. Many scenarios exist where Software as a Service (SaaS), Platform as a Service (PaaS) or Infrastructure as a Service (IaaS) may provide the greatest technical and financial opportunity. Most organizations will consider SaaS as a first choice, followed by PaaS and then IaaS, based on the particular application requirements, costs and benefits in line with business goals. The preference for PaaS and SaaS frees up organizations from operating infrastructure. However, IaaS may be required for situations involving an expedited migration or customized infrastructure. It is important to remember that SaaS should be considered for only nondifferentiating applications and will not always be a first-choice default. Proprietary in-house-built applications that can bring great value to the company will need to consider PaaS and IaaS. Only by working with the business and understanding its goals can the cloud program choose the IT service model that best fits its needs.

The cloud's security foundation also constitutes an increasingly critical component that must be done correctly for the cloud migration to succeed. The organization's security policies and standards should be carefully and thoroughly reviewed and adopted as requirements for the foundational design. Organizations can accomplish this goal through adoption of a Cloud Security Framework (NIST, CSA, etc.) and the required security controls applied to the environment. Appropriate governance parties should engage early on to ensure that the cloud foundation will meet the regulatory and compliance needs of the organization (HIPAA, GDPR, etc.). The best-developed information security policies are measurable beyond organization minimums, can be validated through integration and are enforceable to safeguard data. Depending on the compliance requirements for the organization, the security foundation may also need to consider the geographic location of the cloud infrastructure. The organization should ensure that its data will reside in an area as allowed according to local regulations. Information Security resources must adapt and be current across traditional, native and hybrid cloud deployments. Placing an emphasis on security in the initial foundation and design stages will establish an effective posture, helping to reduce regulatory exposure and compliance risks associated with the cloud and data migrations.

IaaS		PaaS		SaaS
Applications	V/S	Applications	V/S	Applications
Data		Data		Data
Runtime		Runtime		Runtime
Middleware		Middleware		Middleware
O/S		O/S		O/S
Virtualization		Virtualization		Virtualization
Servers		Servers		Servers
Storage		Storage		Storage
Networking		Networking		Networking

Yellow = Self-managed

Grey = Vendor-managed

Financials

The financial model utilized in the cloud will be significantly different from that historically employed with on-premises IT. In the traditional on-premises financial model, CapEx constitutes almost all costs, including rent for infrastructure space, electricity, servers and other IT equipment, while OpEx includes maintenance and support for that physical equipment. The cloud model, however, shifts the majority of costs to OpEx. Eliminating the need for most on-premises equipment and infrastructure, the cloud utilizes a subscription-based financial model in which the organization pays for usage of the cloud resources it adopts. Migrating to the cloud therefore replaces both the CapEx and OpEx costs of an on-premises IT shop with the OpEx costs of cloud resource consumption.

We have identified two leading practices for managing this new, cloud-usage-based financial model: (1) development of an effective tagging strategy and (2) a focus on the three key financial management pillars of Visibility, Governance and Optimization.

A tagging strategy encompasses how an organization assigns attributes to its cloud resources, enabling the company to effectively group usage and costs into certain buckets. Resources can be tagged by many attributes, such as resource type, business unit, application owner and business function. Creating a robust tagging strategy as resources are created will not only make daily cloud usage reports more meaningful, but will also enable the organization to understand usage and cost shifts over time and to forecast accurately.

Implementing this strategy and enforcing mandatory tagging will require discipline from IT owners and the business. The tagging strategy should therefore be made highly visible when the organization focuses on the foundational pillar of Visibility. Under this pillar, the organization will ensure that IT usage and costs are properly understood. Usage of cloud resources should be continuously monitored and reported on; utilization of tagging attributes will enhance the business value of executive-level usage and cost reports.

A tagging strategy will also enable the cost transparency needed for the Governance and Optimization pillars. Under the Governance pillar, an organization builds on the foundations set forth with Visibility and establishes accountability for the IT landscape. Here, the organization will define financial and technical policies and controls, budget and plan for future IT spend, and enable monitoring and alerting for potential compliance violations.

Under the Optimization pillar, the organization will utilize the foundations established in the Visibility and Governance pillars to identify savings and improvement opportunities within the IT cloud landscape. While it is important to remember that a move to the cloud does not always lead to significant cost savings, it does allow for increased financial control of IT spend. Enacting the optimization opportunities will help organizations achieve this control, which will, in turn, bring forward cost savings and gain additional value from their IT spend.
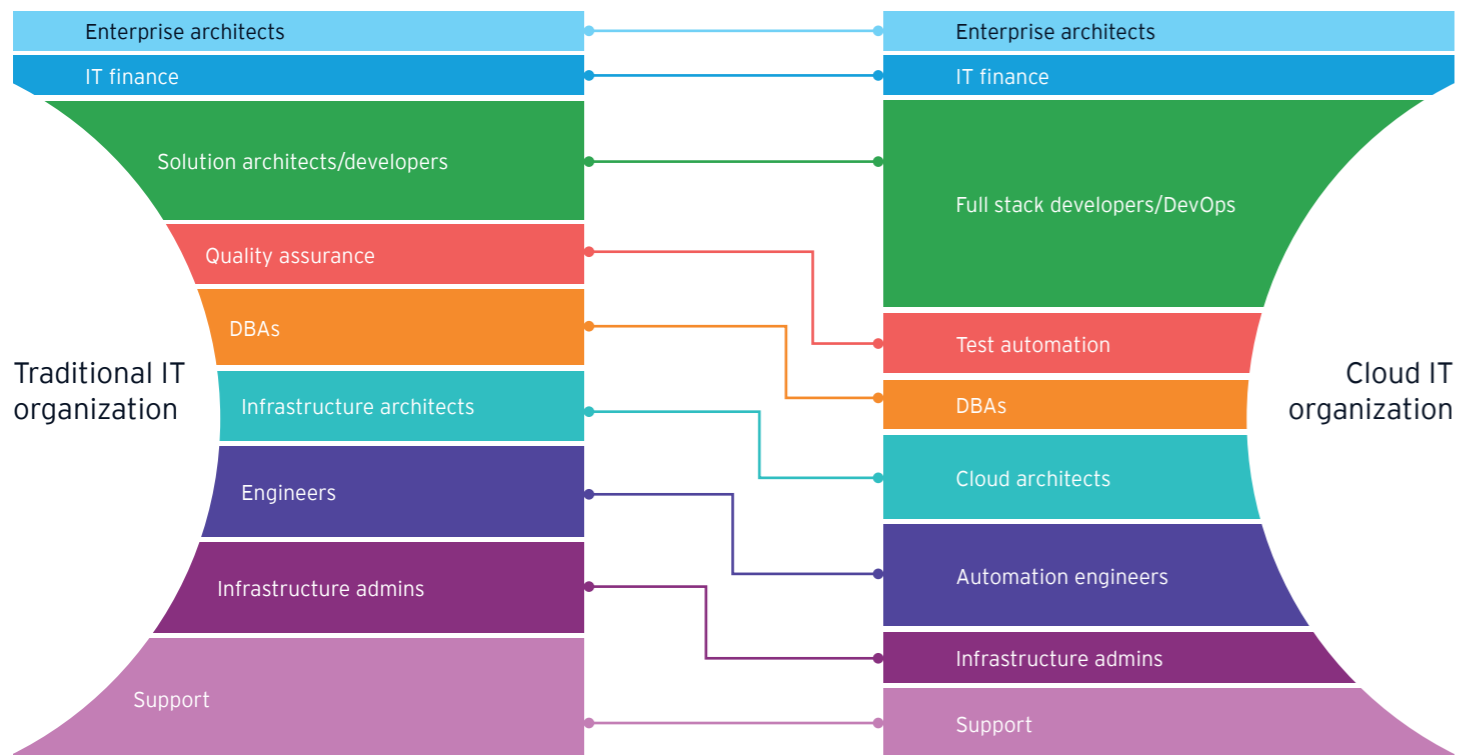
People, process, technology — organizational change management

Transitioning to a cloud-based model demands fundamental differences in the way that IT resources are consumed. These new ways in which resources will be consumed are a significant departure from prior practices and must be addressed before, during and after the transition. The widespread changes that will occur can broadly be grouped into three key categories: technology, process and people.

The transition to a cloud-based IT organization begins with the initial decision to make the change, but the true driving force behind the change is the implementation of new technology. Typically, the shift involves moving from custom-built infrastructure to standardized, commoditized infrastructure. Further changes include the development of a new solution architecture that enables repeatable and rapid development cycles necessary to capitalize on the new cloud technology. Changing technology to these new paradigms is highly visible, creating an immediate ripple effect that impacts processes and people.

Development cycles will be required to support a variety of IT processes, including legacy support structures, shared DevOps and full stack DevOps. To achieve success with such a varied support model, individuals will be expected to specialize in an area while also maintaining a wide knowledge base. In accordance with the shifting structure and needs of the organization, the composition of roles will also be altered. Full-stack development teams will be expected to hold a more prominent role in the organization, compared to the pre-cloud-based model that likely emphasized support groups.

Proactive measures can, and should, be taken to ensure that employees are prepared for the changes associated with moving to a cloud-based operating model. Understanding that these changes will occur is essential, but implementing them at the incorrect time can equally set up an organization for failure. Support is required for existing systems until migrations are finalized; however, completing migrations without ensuring that the proper skill sets exist to maintain the new systems is also a misstep. To mitigate this risk, human change management should coincide with the pace of the cloud migration. The establishment of proactive and proper measures to address these changes should be owned by a Cloud Transformation Office or a Transformation Management Office. Committing to change management can ensure that employees are adequately trained on the new technology, processes and their roles prior to implementation of these changes. Individuals will be ready to operate within their new environments and can extract the true value associated with the cloud for a company.

Traditional IT organization	Cloud IT organization
Enterprise architects	Enterprise architects
IT finance	IT finance
Solution architects/developers	Full stack developers/DevOps
Quality assurance	Test automation
DBAs	DBAs
Infrastructure architects	Cloud architects
Engineers	Automation engineers
Infrastructure admins	Infrastructure admins
Support	Support

Conclusion

During the past 20 years, most organizations have implemented substantial changes in their technology-based solutions and in the business capabilities enabled by new technologies. For the most significant migrations (i.e.. to distributed environments, the internet, data mining), early adopters have had to experiment in order to identify the appropriate implementation approach, and later adopters have benefited by reusing the most successful approaches. When implementing a cloud program, organizations can now benefit by following the leading practices identified by us within this paper. Each section identified a general area of concern, as well as a few specifics that the organization should consider when addressing that concern. For more specifics and guidance within each leading practice, stay tuned for future articles in which we share more detailed information on how to make your cloud program a success.

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