PATHFINDER REPORT

Now Instead of Later

Why it's Time to Take a Serious Look at Workload Modernization and Migration

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COMMISSIONED BY

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

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EXECUTIVE SUMMARY

The sea change in attitude toward the use of public clouds by organizations of all sizes has become a global phenomenon. At this point in the cloud computing revolution, some ground truths have already been established:

- Cloud computing is mainstream and ranges from the large global hyperscale public cloud providers (i.e., Amazon Web Services and Microsoft Azure) and their rapidly expanding portfolios of complex services to local service providers that are delivering private and managed hosted clouds and platform-as-a-service (PaaS) environments.
- Access to compute, storage and network infrastructure has never been easier, and most businesses want to take advantage of that. Indeed, many organizations are now operating in 'cloud first' mode.
- It's a home truth that enterprises are not prepared to fully leverage what's available in the cloud today, yet they want (and need) to derive all of the benefits of 'digital transformation' in order to remain competitive.
- To benefit, they need to modernize, streamline and migrate their applications into the cloud (and then continuously revise and improve them).
- The process is not necessarily easy.

Legacy applications can require significant modification or even complete reinvention to be able to run on cloud platforms. Workloads that can be ported more or less intact often can't take advantage of the benefits of modern infrastructure platforms such as agility, elasticity and cost savings. And what's more, they often can't be efficiently used with modern classes of applications such as mobile device applications, container development or big-data workloads. That means enterprises are often watching competitors or new entrants with more up-to-date approaches breeze by.

In short, the conversation about modern IT is about rethinking your software applications – how you can or should modernize them, and migrating them to new platforms that allow you to make tangible gains in efficiency, service delivery and business outcomes. There is a practical and increasingly well understood approach emerging, which is to break the journey into manageable stages: re-platform, run the application, then refactor and revise it.

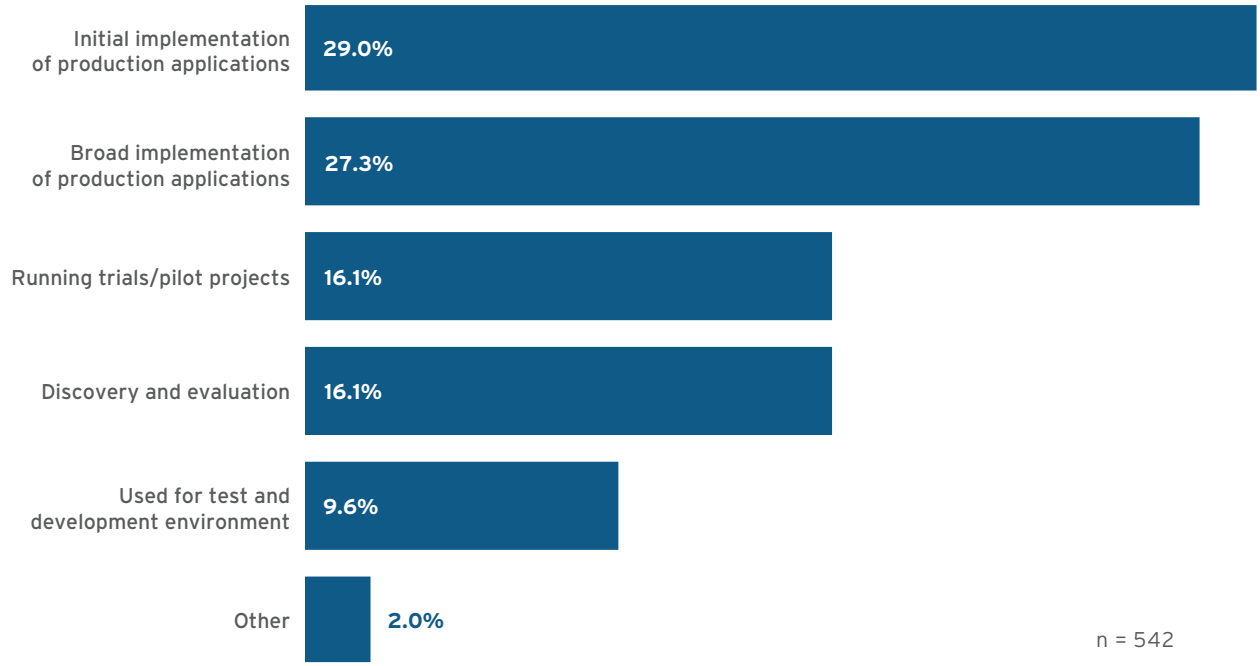
This approach is especially important for midsized enterprises, which often face a particular challenge: they are too large and complex to simply settle for off-the shelf IT products and services, yet they lack the staffing, resources or expertise to design and implement their own systems or lobby vendors for specific technologies as large enterprises can do. For this class of business, pinched between being too big to settle and not big enough to innovate effectively, cloud and managed IT and infrastructure services often provide the critical bridge between legacy and modern IT service delivery.

The Drive Toward Application Modernization and Migration for Mid-sized Enterprises

Cloud infrastructure and along with it, application modernization and migration are now mainstream, with more than 72% of all enterprises using it in production, implementation or pilot projects. When we add in the consumption of software as a service (SaaS), that number rises to 90%.

Figure 1: Cloud adoption across the enterprise

Q. Which of the following best describes you organization's adoption of cloud computing models?



Source: 451 Voice of the Enterprise: Cloud Transformation, Workloads and Key Projects 2017

The appetite for cloud infrastructure is still growing rapidly. Twenty-seven percent of enterprises use cloud infrastructure in production, and slightly more (29%) have begun initial implementation of production workloads in the cloud. Sixteen percent report they are doing discovery and evaluation, and another 16% are running test projects for cloud usage. This means almost two-thirds of all enterprises surveyed have made serious commitments to cloud infrastructure. The early adopters at the top of Figure 1 have driven a sprawling new market of services and software to manage and orchestrate cloud services and application infrastructure in cloud environments.

This means viable and mature software for nearly every aspect of application migration and modernization exists in most categories, with thousands of use cases and support from every major vendor. Therefore, it has never been easier or more productive for an enterprise to look into modernizing applications and infrastructure. On the flip side, it also means that legacy products are rapidly falling off the back end of vendor support, yet another compelling reason for enterprises to migrate to the cloud.

Businesses that are planning initial implementations (Figure 1, 29%) can take advantage of proven products and strategies from service providers and can expect higher levels of success and return than the early adopters. The last one-third of enterprises that haven't made a move yet (the 16% doing pilots and the 16% performing discovery, can similarly expect an abundance of choices. In fact, some of the hardest decisions for this group will involve picking the right solution rather than deciding to make the move, because their choices will be more plentiful.

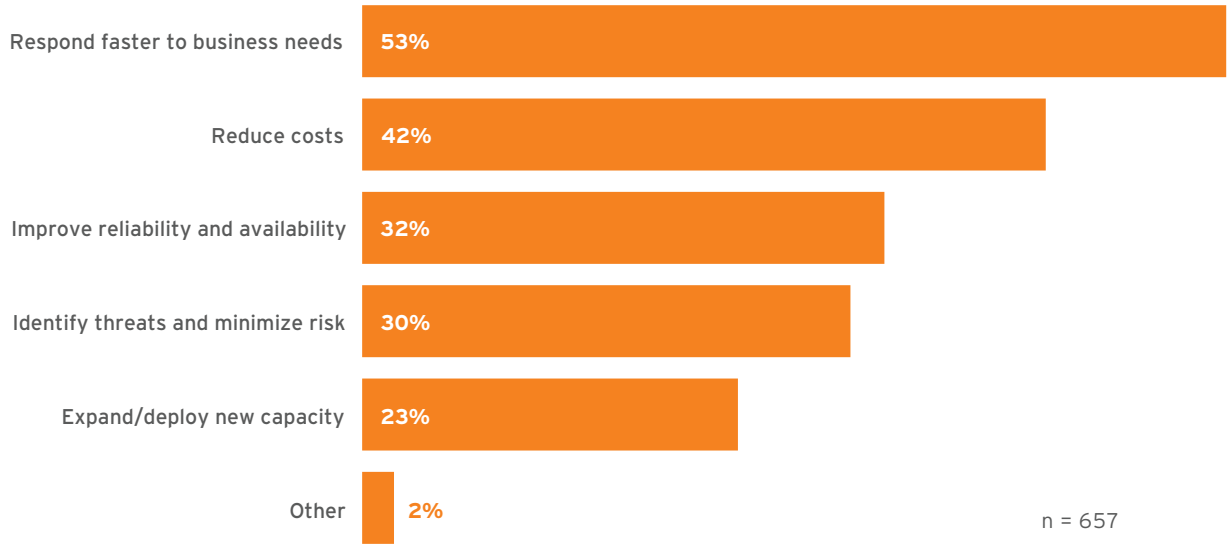
Cloud adoption goes hand in hand with application modernization for many reasons. Chief among them is that the adoption of the cloud-style infrastructure enables increased agility, service delivery capabilities and greater cost efficiencies, turning what was once a large, fixed capital expense into a right-sized, flexible operating expense. But what is driving this appetite for newer, faster and more efficient modes of operation? It is the fear of failure. Enterprises that do not adopt and modernize and expand to new platforms are being left behind by the competition.

BUSINESS DRIVERS: BUSINESS IMPACT OF GETTING THE RIGHT WORKLOADS IN MIGRATION AND PLACEMENT ACROSS PUBLIC, PRIVATE, SAAS AND IT SERVICE PROVIDERS

Two of the top concerns facing IT organizations today are: 1) Responding to business needs with cloud computing models and strategies at 53% and 2) Reducing budget overall at 42%. Improving reliability and flexibility was the functional third choice, reflecting the concerns that enterprises have today over how IT can serve the business in the always-on, always connected era.

Figure 2: Top concerns for IT organizations

Q. What are the most important goals for your organization's IT environment over the next 12 months? Please select up to 2.



Source: Voice of the Enterprise: Cloud, Hosting and Managed Services, Budgets and Outlook 2017

In an era of IT resource saturation, where it is easier and cheaper than ever to get and operate a server to run existing applications, business outcomes being held back by legacy software has become a paramount concern. This challenge is especially acute for midsized organizations stuck with legacy applications and hardware that can impact their ability to remain competitive.

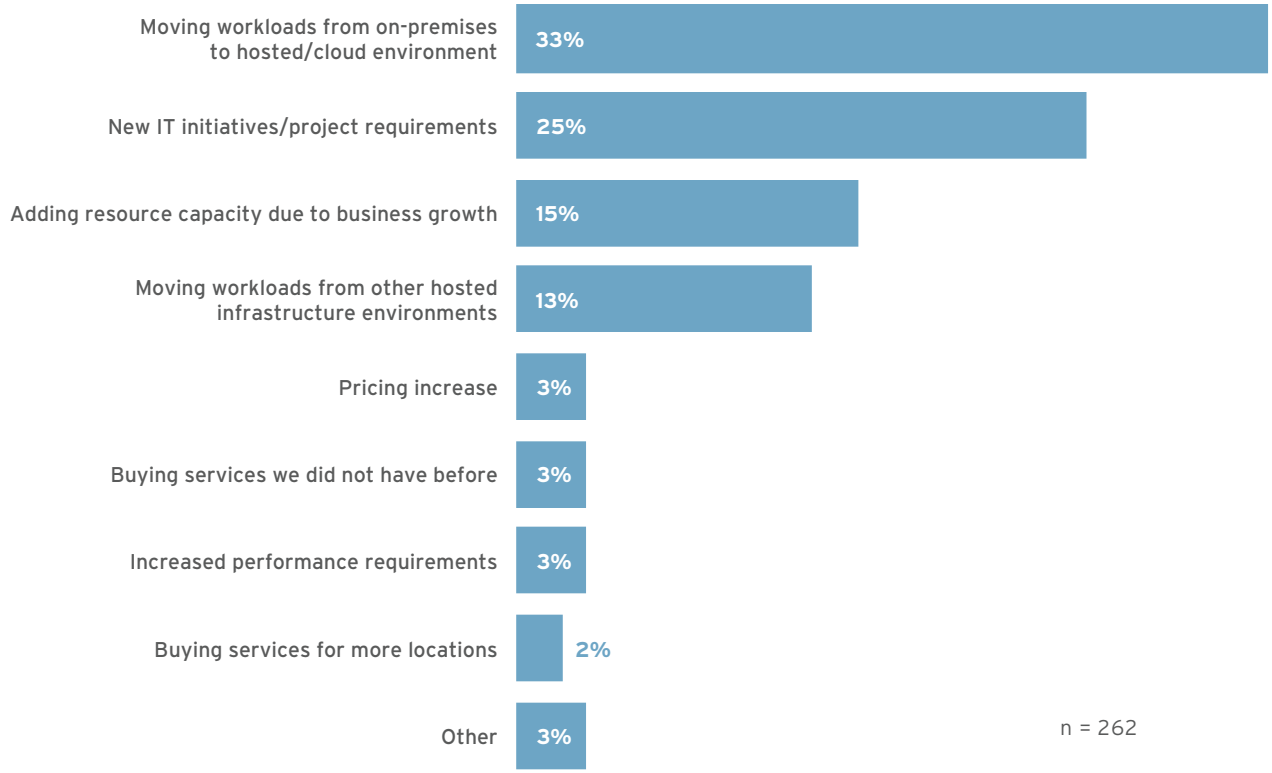
It's easy to contemplate the easiest way out of replacing racks of old gear with new ones, or simply removing a legacy workload entirely from the datacenter and parking it in a hosted cloud or public cloud environment. The ability to switch the cost picture and measure ROI in months or even days instead of years is very powerful, especially when combined with the lower costs of entry. However, this needs to be seen as a first step only, and the goal has to be change. Otherwise, enterprises won't be able to realize measurable increases in efficiency and service. Applications have to be modernized, adapted and sometimes rewritten before the IT organization can realize the full potential of using cloud infrastructure.

For IT professionals, there are two imperatives: **1) Understand the potential of on-demand, flexible and global access for the application, and 2) Design a campaign of modernization specifically for this kind of access to infrastructure. Many midsized organizations will find this a daunting task because they lack the skills or knowledge, but there is a large pool of intermediaries, IT services providers and cloud experts to help bridge that gap.**

The cloud has become the place to do business, and enterprises that aren't actively considering how to get their existing mission-critical applications closer to the action or re-architect them to take advantage of the increased flexibility are going to be left behind. Survey data shows that 33% of enterprises are putting part of their budget toward migrating applications into cloud environments, and 25% are putting money into new IT initiatives to feed this demand.

Figure 3: Reasons for cloud deployment spending

Q. What is the top reason for the increase in your organization's spending on this deployment model in 2018, compared to 2017?



Source: Voice of the Enterprise, Cloud, Hosting and Managed Services, Budgets and Outlook 2017

Businesses that implement a long-term application-modernization strategy need to consider the technical drivers and downstream impacts of their conversion.

TECHNICAL DRIVERS

Improved data security is one of the top technical drivers of cloud adoption and application modernization. Securing data is top of mind for enterprises moving to the cloud, followed closely by application migration/modernization and technology refresh. Enterprises – particularly midsized enterprises – are inherently behind the security curve, so they look to highly secure and robust public cloud platforms to lower risk. In doing so, however, they need to ensure that applications are properly contextualized and that the risk profile is better understood. Putting servers in another operator's datacenter may make the hardware safer, but it still won't stop a leaky web server or a phishing campaign. However, removing the physical management layer and a great deal of network security work frees up IT staff to address those higher-level issues.

Backup and disaster recovery is another major driver, cited by a majority of enterprises as a first use case. Cloud-based backup and disaster recovery that can span public, hosted and private resource pools is trivially easy compared to the traditional datacenter replication model. However, applications need to be tuned and failover modes fully understood in the cloud mode, representing another opportunity for modernization.

However, the most important technical driver is access to advanced service capabilities that a midsized firm simply can't afford or couldn't build, such as access to mobile device services; online data gathering and processing tools; infrastructure on demand by the month, hour or minute; innovative analytics; and database deployments. Managed service providers typically have portfolios of application services that span public and private clouds. Public cloud providers have hundreds of services. It is simply not possible for midsized enterprises to contemplate running a multi-cloud deployment on their own. Forward-looking businesses should consider service providers that offer PaaS toolsets that span private and public clouds.

All of these benefits hinge on making the commitment to application modernization, however. We address the practical approach to that crucial next step below.

PRACTICAL USE CASES FOR APP MODERNIZATION AND INFRASTRUCTURE MODERNIZATION

Notable practical use cases for application modernization revolve around the ability to segment parts of workloads and run them in the best execution venue – the most appropriate place for a workload based on price, performance and other concerns.

SMBs with clearly delineated vertical needs have a wide array of this kind of mix-and-match already. Local banks, for example, often turn to custom hosted online banking platforms built by software vendors, and interface with customers by collecting data from the hosted website and application and integrating it with their systems of record, which are heavily regulated.

Restaurants and delivery services ranging from groceries to medical supplies turn to hosted application services for online ordering, payments and facilitation. There is a hosted service for almost any service delivery use case conceivable today. The questions that midsized enterprises need to ask are: what are they missing out on, and how much will it cost to displace any existing on-premises deployments.

One example is that of a manufacturer and retailer: sensitive data such as customers' personally identifiable information from online sales transactions and business records are kept on-premises and certified compliant. A trusted third party may host and run the e-commerce application and provide online security services while passing the data back to the secure site. Advertising campaigns (both online and in broadcast media) are built and streamed in the public cloud, where resources can be shut down when not needed, and security is less of a concern, but results of the campaigns are gathered and analyzed in-house after the fact. Analytics, application performance management and monitoring are run in combination with online services managed by the trusted services provider, and used by the enterprise.

Another practical example is endpoint device management in a mixed 'bring your own device'/enterprise-owned scenario. Email is hosted by a service provider and delivered to employee phones and company laptops alike. A custom sales application is built for employees' phones and company laptops that is tied into a hosted SaaS CRM platform used by an enterprise business unit. A managed services provider hosts an enterprise resource planning application tied to on-site devices such as barcode scanners, fleet vehicles and point-of-sale terminals. All of the relevant information is automatically delivered to a mobile device management platform that is managed by the enterprise for business analytics and maintenance.

Factors that Determine Workload Placements

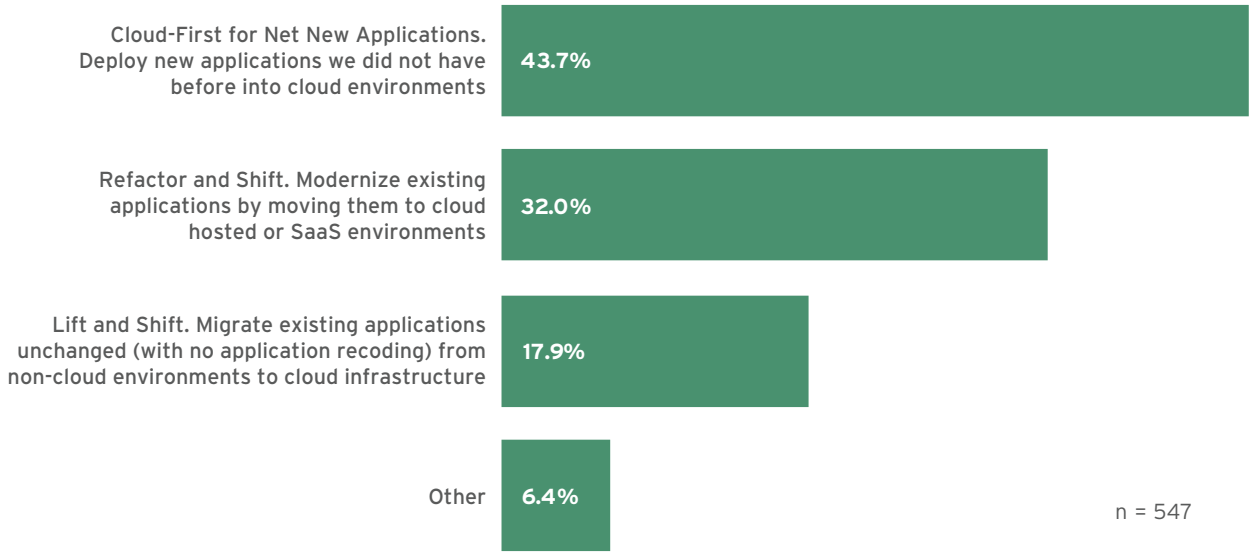
Finding the best execution venue for a legacy application is reliant on a number of factors, many of which are not technical. Older software may by licensed directly and specifically to existing hardware or be built for specific hardware that can't be virtualized or migrated easily. Compliance and security are always a factor. Mission-critical infrastructure can't simply be shut down and wheeled somewhere else over the weekend; planning and careful deployment are needed to ensure uptime. A workload may simply be so much of a spaghetti mess from a decade or more of tinkering that it can't be moved but has to be recreated.

KEY DECISION FACTORS

How are the decisions prioritized? And which workloads or apps first? The key decision factors are the level of complexity in the workload, ease of migration and expected results. 451 Research shows that enterprises favor net new applications for modern platforms, but they prefer refactoring existing applications almost as much. However, 'forklift' migrations are less attractive.

Figure 4: Net new vs. existing application migration

Q. Which of the following best describes your organization's primary approach to cloud-based application deployment today?



Source: Voice of the Enterprise: Cloud Transformation, Budgets and Outlook 2016

Many applications are relatively simple to grasp in operational terms: email, productivity applications, CRM and human resource management/payroll workloads are completely mature, and the only significant investment for an enterprise is company data. These applications are the first to move to SaaS – there's no benefit to modernizing or optimizing them.

Next are workloads that are essential to the enterprise and require investment in software development and integration, but may be easy to migrate because they are virtualized or are partially integrated with platforms such as e-commerce already. Refactoring can be as light or as comprehensive as makes sense for each application. **For example, software used for crunching data and producing analytics could be relocated to a hosted provider and data ingress redirected with resultant gains in efficiency and budget. Or one of the many online big-data platforms could be utilized to replace the existing software but generate the same, or better, capabilities to produce the needed results.**

The last category consists of the permanent IT fixtures that nobody seems to know what to do with – mainframes and storage arrays that might be decades old but cannot be replicated on modern hardware or virtualized, and aren't supported by the original vendor. These require a complete reinvention of the original application starting with the business need and working upward from the ground. It can be rewarding to do this, but it can also burn a lot of time and effort for comparatively little gain.

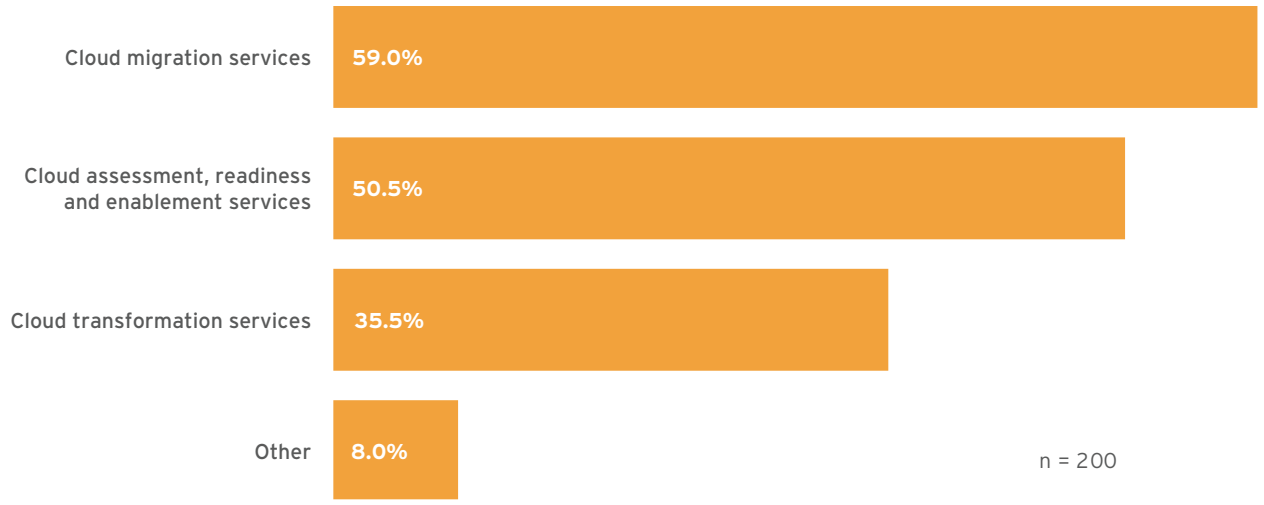
KEY PRACTICAL CONSIDERATIONS: TECHNOLOGY AND PLATFORM, TIME REQUIRED, RESOURCES NEEDED, EXPERTISE AND SKILLS

The practical considerations boil down to a realistic assessment of existing resources and skills. This is where managed service providers come in. SMBs typically have a staff of generalists running IT, and while they may support developers eager to use public cloud services and build modern applications, the developers are not responsible for the health of the overall IT organization.

Expertise with cloud platforms is a specialized domain in IT right now, with hundreds of new certifications coming online at the hyperscale providers. Experience with private cloud platforms is at a premium. Because of this, about 40% of enterprises engaged in modernization and transformation efforts employ third-party professional service providers. Of those, about 60% ask for help with migration and adapting applications to the cloud platform, 50% are looking for assessment and planning help, and 35% are looking for top-to-bottom cloud transformation of the IT organization. **These providers are essentially the missing link between midsized enterprise and application migration and modernization.**

Figure 5: Professional services for cloud transformation

Q. Which of the following types of professional services for cloud enablement does your organization currently use? Please select all that apply.



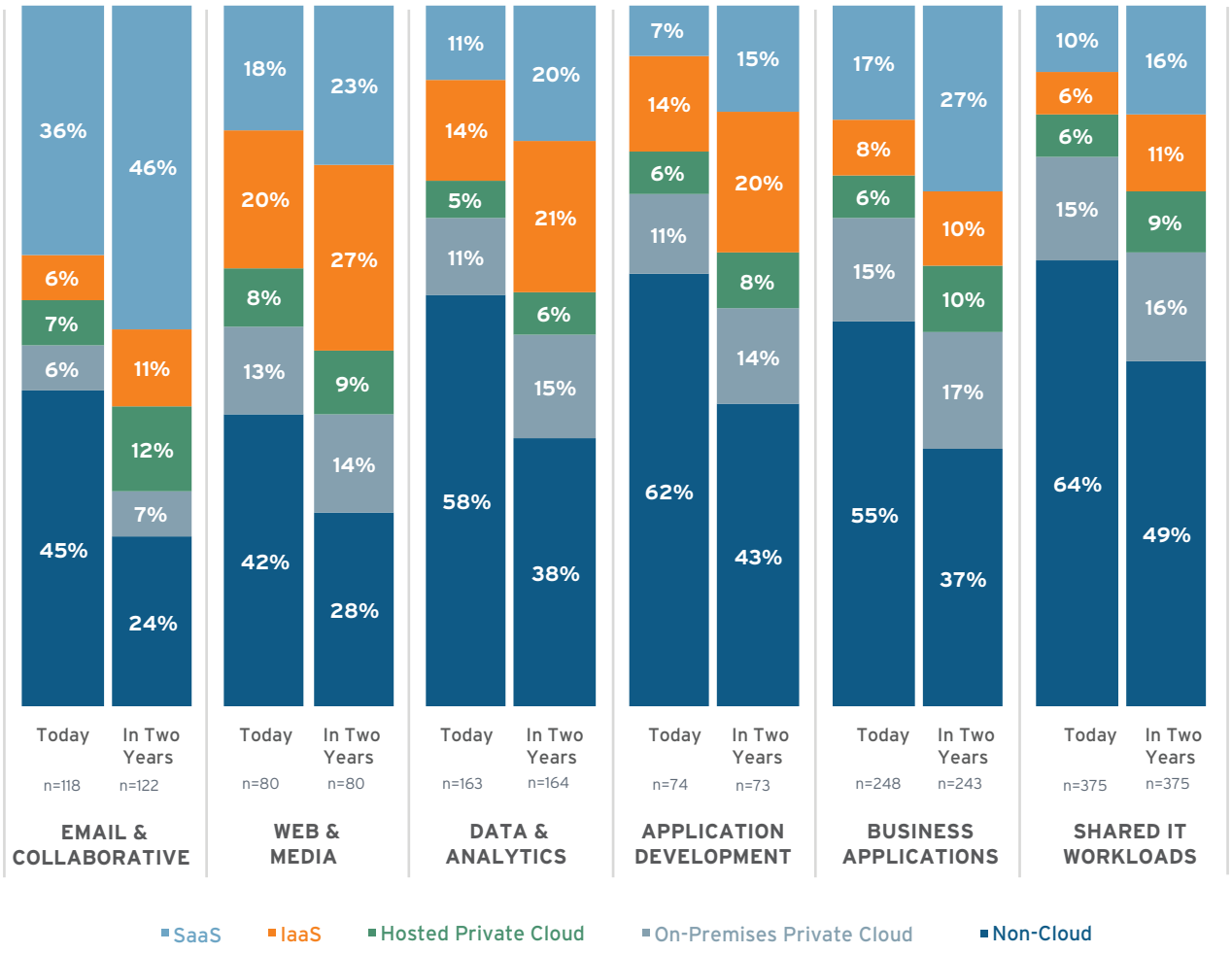
Source: 451 Research, Voice of the Enterprise: Cloud Transformation, Budgets and Outlook 2016

What Apps/Workloads Are Moving Where?

Because this trend has become mainstream, workloads across the enterprise are all seen in some percentage in all forms of the cloud model: public IaaS, hosted private, private on-premises cloud, with a significant portion still on legacy infrastructure. Looking by category, workloads that are mature and well-defined, such as email, gravitate toward SaaS, while traditional mission-critical domains such as data, application development and business applications (e.g., ERP) show a larger legacy presence. Workloads that already interface with online services, such as web and media (streaming, image hosting, advertising, e-commerce) have the strongest mix. However, all workloads show a strong, dominant trend of moving away from legacy applications toward modern platforms with large shifts expected over the next two years.

Figure 6: Workloads by venue

Q. Thinking of all the applications your organization runs, what percentage are currently running in the following environments?
Q. Thinking of all the applications your organization runs, what percentage will be running in the following environments in two years?



Source: Voice of the Enterprise: Cloud Transformation, Workloads and Key Projects 2017

Conclusion and Recommendations

The writing is on the wall: even for midsized enterprise IT organizations that are caught between a lack of resources and complex workloads and an intricate online arena, application modernization/migration has to be on the table. There are clear cases where SaaS can be used to replace standard applications with well-defined parameters – the only questions revolving around data privacy and regulation.

There are applications that could be replaced outright by a combination of PaaS and IaaS, using some of the innovative data-processing services on the market, and radically re-imagined in the process. If that seems like too big a bite, consider migrating legacy applications 'as is' into modern cloud environments simply to reduce costs and bring down expensive datacenter overheard. If done properly, those legacy applications are already in position to be modernized when the time comes.

However, the key to success is carefully balancing the time and investment put into application modernization and migration with the time and investment put into the hands of the service providers that will operate the infrastructure. Few midsized organizations are in a position to run their entire IT portfolio themselves, or even to understand and master the dozens of relatively new technology platforms that are enabling the rapid pace of the IT market and the online economy today. It is critical to maintain control of this ongoing process, yet select the best mix of public cloud services, in-house enablement and managed services and IT services providers to do the rest of the work.

THE ROLE OF SERVICE PROVIDERS

Successful providers will be those that help 'upskill' a customer's own operations teams, supporting the organizational and operational aspects of the deployment in addition to the technology piece. After all, the whole point of moving to the cloud is to get out of infrastructure operations and focus on what matters: business outcomes. By making ongoing recommendations about which services to use, service providers will have a vested interest in those outcomes.

Service providers must also be the destination not only for new application deployment, but for modernized, migrated and refactored applications. Right now, migrations are complex, costly and highly disruptive. Just imagine if they were free and easy! Because they are not, this presents a tremendous opportunity for providers that can innovate to improve this experience.

The best approach is to be methodical and realistic at every stage.

ASSESS YOUR ENTIRE ORGANIZATION AND BUCKET WORKLOADS IN MANAGEABLE CATEGORIES.

- Easy: these workloads can be or already have moved to SaaS.
- Approachable: workloads that have migration potential (e.g., already virtualized and consolidated or standard web architectures) or greenfield applications.
- Hard: custom legacy applications, hardware-dependent, location-dependent.

ASSESS THE BUSINESS REQUIREMENTS FOR EACH PART OF THE ORGANIZATION.

- Is current IT matching those requirements?
- If so, how does that stack up to modern deployment scenarios?
- If not, where is the best place to build new capabilities?
- What is the end goal in terms of the business?

ASSESS THE ORGANIZATION'S SECURITY POSTURE ACCURATELY AND WITHOUT JUST TICKING BOXES

- How porous is the datacenter?
- What real-time management, monitoring and mitigation exists, and is it used?
- What is the state of disaster recovery and business continuity in real terms?
- Where are security efforts redundant vs. relying on a trusted partner and/or public cloud infrastructure?

- **How strict are compliance needs, and how does that affect Easy/Approachable/Hard?**
- **Look for service providers with the best mix of infrastructure, expertise and services that your situation requires.**
- **Plan but don't procrastinate. Everything is on demand these days.**
- **Spend the least amount of effort on the easiest migrations and the most effort on the most approachable ones – save the really thorny cases for last.**

On balance, the most important thing to do is have a realistic, sober vision of exactly what the IT migration consists of and look for manageable bites. Don't look for 'everything in a box' solutions, and don't throw everything over the wall to chase after trendy new modes of operation such as containers or serverless computing (until you can use them properly). Everything is available on demand, and testing and proofs of concept should take days, not months.

Today's enterprises need to (and should) feel that they are in control of their applications' service delivery capabilities from top to bottom during and after the process of modernization and migration. They should also look to dole out as much of the actual work as possible to service providers that fill in gaps in staffing, expertise and operations. In other words: Update and create new recipes, but let others do the cooking.