Portfolio Evaluation Is The Key To Migrating Applications To The Cloud

Processes: The Cloud Computing Playbook

by William Martorelli

March 25, 2016

Why Read This Report

Cloud services in the enterprise are growing, as customers increasingly want to get out of the data center business. While these services offer flexible new options for CIOs, infrastructure and operations (I&O) professionals, and other business and technology leaders, they pose new challenges in sourcing and ongoing administration, particularly as attention shifts to systems of record and multicloud destinations. Many customers not only take a cloud-first view of migration but also pursue a "public cloud or bust" strategy. I&O pros should use effective portfolio evaluation — including strategic rightsourcing — to identify the right providers and migration candidates.

Forrester reviews and revises this report periodically for continued relevance and accuracy; we are updating it now to reflect our latest research on migrating applications to the cloud.

Key Takeaways

Not Every Application Is Equally Suited For The Public Cloud

Ambitions to move applications to the cloud are accelerating, but not all applications are equally suited for migration to the cloud. Exercise due diligence in your portfolio analysis to determine the appropriate target model: cloud, traditional hosting or outsourcing, or on-premises.

Use A Portfolio Evaluation Method Such As Strategic Rightsourcing To Identify Candidates

Given the speed with which they're seeking to move applications to the cloud, customers need a flexible and lightweight outsourcing decision-making method for the cloud era. Forrester offers a tool called strategic rightsourcing as a first step in determining your cloud sourcing strategy.

Don't Neglect Appropriate Sourcing And Vendor Management Disciplines

Identifying candidates is only the beginning. Adapting applications to the cloud involves new vendor relationships, bringing new vendor management implications. These new relationships require care and feeding, which is not always on the mind of business customers rapidly seeking new capabilities.

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Processes: The Cloud Computing Playbook

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Notes & Resources

Forrester used information from client inquiries and interviews concerning application portfolio migration to the cloud in writing this report.

Related Research Documents

Brief: AWS Goes All-In On Public-Cloud Enterprise Apps — Should You?

The State Of The Cloud: Migration, Portability, And Interoperability, Q4 2015

Strategic Rightsourcing Application Portfolio Analysis Tool

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The Cloud Migration Pace Accelerates, Aiming For Public Cloud

Cloud computing has proven its pivotal role in optimizing speed and agility in any business technology (BT) agenda. Because of this, enterprises and I&O pros aggressively seek to migrate their business applications to cloud services. Whereas many early cloud migration strategies focused on the role of the private cloud, plans to migrate to the public cloud have accelerated. Some clients tell Forrester they hope to migrate as many as 80% of their applications within a period of four to five years. These applications typically number in the thousands for large enterprises. Increasingly, these plans aim for the public cloud, spurred in some cases by early adopters and thought-leading enterprises like General Electric (GE), a major customer of Amazon Web Services (AWS).[1]

Not Every Workload Is Destined For The Cloud

This analysis assumes that moving applications to the cloud truly presents real business value and that you're well aware of why you're doing it. However, you need to remember that:

- **You can't make everything work in the cloud.** Applications subject to significant variations in demand due to seasonality and other factors are good candidates for the cloud, while others are not. The desire to move applications to the cloud is widespread. Yet no technology can rationalize all applications to work effectively in the public cloud. There are many reasons for this, including the fact that many existing applications are written with assumptions that don't fit with the cloud.[2] As a result, it may be either impossible or economically unwise to move them. Similarly, customers have a widespread desire to burst to the cloud to avoid having to provision for peak loads, but currently, the ability to burst to public cloud is limited.
- **Certain portions of applications may fit, while others may not.** Cloud is not necessarily an all-or-nothing proposition. Cloud practitioners find that while certain elements of an application, such as its calculating logic or user interface, lend themselves well to the cloud, database-processing aspects may not. Life-cycle considerations can also pertain. While testing and development may be ideal for the public cloud, late stages of testing, staging, and production simulation may prove prohibitive in the cloud or may demand a variation on the cloud service originally considered. For example, one Forrester client was concerned about the security of new platform-as-a-service (PaaS)-based SQL solutions so decided to keep the database portion of one cloud-bound application in-house until it was able to allay these security concerns.
- **Public cloud is not the only destination.** It bears repeating that not all applications destined for the cloud are necessarily heading for the public cloud. A variety of models, both cloud and noncloud, public and private, may be suitable destinations for your applications workloads, including virtual private cloud, hosted private cloud, and even managed hosting. Why is this important? Going to the public cloud versus the private cloud is not the same journey. Moreover, different target models bring additional considerations related not only to their processing

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characteristics but also to specific sourcing considerations.[3] That said, a consensus that the public cloud is the ideal and default destination for all manner of workloads, including production systems, appears to be building.

Cloud Migration Has Three Primary Vectors

Workload migration not only considers different destination models but also has at least three primary vectors:

- **IaaS.** Migration of applications to infrastructure-as-a-service (IaaS) is typically known as "lift and shift" migration. It reflects the move from some legacy environments directly to IaaS without significant operation. Lift-and-shift is rarely a successful option, but IaaS platforms can be appropriate for migration.[4]
- **PaaS.** Development based on platform-as-a-service is superior to pure IaaS in that it provides clients with the ability to operate in the cloud but also has the advantage of achieving additional synergies with future development and extensions. The supplied software environment is much richer, making migrations easier and faster.[5]
- **SaaS replacement.** Of all the potential vectors, enterprise customers essentially don't question direct replacement of in-house applications as a viable strategy. Software-as-a-service (SaaS) is proving wildly popular and largely successful. It presents a substantial redistribution of accountability for applications processing. However, SaaS is frequently more expensive than on-premises operation and may not necessarily prove to be more flexible.[6]

The Three Primary Considerations For Moving Workloads To The Cloud

Enterprise clients considering a widespread shift to the cloud normally have three categories of concerns (see Figure 1):

- **Business considerations.** Migrating applications to the cloud is not outsourcing in the classic sense but does entail important business considerations such as an apparent loss of control over applications processing. Customers presume that test and development workloads are an appropriate starting point but may hesitate to place mission-critical workloads in cloud environments. Licensing considerations even play a role, such as Oracle's price attractiveness on Z-series mainframes.
- **Technical considerations.** One of the most frequently cited technical considerations is the use of modern technologies in application construction. But this pertains to more than the language or development environment used. Some customers find they rely on legacy technologies at the operating system layer for which no equivalent exists in any cloud environment. Other considerations relate to specifics of application construction. For example, a lack of persistent data certainly makes the decision easier, as does lack of reliance on nonrelational database structures. The need to establish substantial links with other applications is another gating factor.

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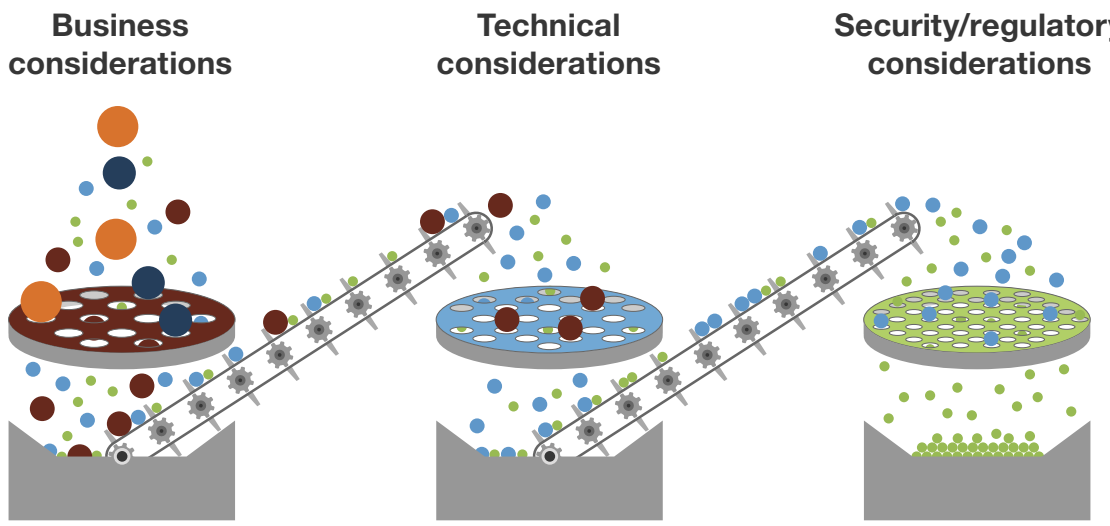
› **Security and regulatory considerations.** Merely pointing out that AWS's security is likely better than your own is not enough; customers need significant education to underscore this point. Yet, paradoxically, security and regulatory compliance teams are likely to require a thorough security evaluation before they are comfortable proceeding. There are many potential risks associated with moving to the cloud that are real and tangible and are likely to strongly influence migration plans. Concerns about security and regulatory compliance are the most frequently cited concerns about cloud. These concerns are likely to result in a lot of objections but are also susceptible to rapid shifts in perception.

FIGURE 1 Application Portfolio Analysis Will Focus On Three Key Criteria In Evaluating Suitability For Cloud



Cloud Migration Strategies Must Acknowledge Changes In Application Delivery

Applications aren't what they used to be. Therefore, cloud migration strategies need to consider which applications — or more precisely, which application *components* — will need to be migrated. Increasingly, three trends are influencing the evolution of application architectures.

› **Microservices.** Today's applications architects envision applications as composites: collections of independent services, in many cases across different operating tiers, as opposed to monolithic all-in-one constructs. Open APIs connect the many parts into what appears as a single application. This transition is still in its early phases, but most customers appear to be myopically thinking in monolithic terms when contemplating cloud migrations.

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› **Multisourcing.** If applications manifest as individually cooperating services, it necessarily follows that at least some of these services will derive from different sources, whether internal business developers or external suppliers. Coordinating delivery and operations activities across these disparate groups will require mastery of multisourcing disciplines.[7]

› **Microsegmentation.** Application delivery increasingly uses externally delivered SaaS services and bring-your-own device models, challenging conventional ideas of perimeter-based security. What customers need is a new vision of security. Microsegmentation divides the data center into smaller, more protected zones. It is increasingly at the heart of that new vision. Consider virtual network infrastructure, as it's the "magic" behind this approach.[8]

Cloud Migration Has Important Implications On Sourcing Strategy

Don't perform your migration analysis in a vacuum, independent of the implications on your broader sourcing strategy. Strategic rightsourcing of your applications will likely incorporate new supplier relationships along with new challenges in managing them.[9]

› **Customer responsibilities vary across cloud and noncloud solutions.** Different cloud and noncloud solutions impose different levels of responsibility on the customer. This is characterized by the "uneven handshake" inherent in cloud solutions.[10] Not only do cloud models present particular challenges for demand management, given that demand is largely outside of I&O control, but they impose many governance responsibilities on the buyer that are baked into conventional technology outsourcing services.

› **Physical proximity becomes a more important factor in systems design.** You cannot ignore the network gravity effect that exists between the data and the services that process that data. The two need to be in close proximity, as even the fastest networks can make the link between them appear slow for huge sets of data common to big data analytics and other workloads. Also, latency between distant locations cannot be overcome by brute force, only by smarter approaches to the architecture.[11] Finally, network topologies will need to be reconsidered in the era of cloud-resident applications. For example, North American network architects have optimized for "east to west" traffic, not traffic to and from the cloud.

› **Customers who move too fast will risk the cloud rebound.** Sometimes, applications you thought were gone to the cloud for good may wind up coming back. For example, business users at one Forrester client purchased a SaaS solution but unwittingly exposed sensitive data. Another client found it uneconomic to host SharePoint applications in the cloud and wound up rehosting them — at least temporarily — back in-house. These are just two of myriad reasons why some applications return from the cloud, and they demonstrate how the headlong rush to the public cloud can cause unintended consequences if done too hastily.

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› **An array of migration aids and services is emerging.** Every supplier of application management services also delivers application modernization services. These include services like portfolio evaluation to identify candidates for migration to the cloud, similar to Forrester's strategic rightsourcing tool.[12] There is no perfect approach to portfolio evaluation. Ultimately, these are tools to help you achieve internal alignment and consensus. If you need assistance, given skill constraints, external service providers can help.

Recommendations

Look Beyond One-Off Replatforming For Your Cloud Migration

If you're anxious to take advantage of the economic and flexibility advantages of the cloud, you may be concentrating on moving workloads rapidly. Beware the simple lift-and-shift approach, as it may expose dangerous strategic flaws. Successful possibilities require deeper strategic thinking and execution. Clients and I&O professionals must take an applications view to perceive these possibilities.

› **Look for SaaS solutions first, then consider additional alternatives.** The most straightforward approach is to identify opportunities where you can replace existing services with SaaS equivalents. Find other solutions like appropriate "landing zones" for applications not well suited for the cloud, but adjust your governance approach according to key differences in the models. Where appropriate, consider indirect contracting models for the cloud to help with contracting and service management challenges, but be careful of unintended side effects like vendor lock-in or potential competitive exposure. For example, one Forrester client happily employed a SaaS application until a direct competitor acquired it, at which time the client found itself in the odd position of having key customer data owned by a rival.

› **Use your service app store as a unified mechanism for demand management.** IT service management (ITSM)-oriented service catalogs are converging with consumer-oriented app stores to yield a more unified self-service portal. Take advantage of this convergence in your cloud migration strategies.

› **Plan for contingencies.** Have a plan in place for when migration strategies don't work out as hoped, including infrastructure requirements, personnel needs, and internal data center capacity (or alternative hosting infrastructure).

› **Know that availability of talent is likely to prove your biggest challenge.** Forrester clients are learning that availability of talent is a critical consideration in the move to the cloud. Take proactive steps to reeducate and retrain your staff. Many clients are learning that technical acumen is not enough to ensure success in the cloud world. Employees must possess technical depth but must also be capable of seeing beyond their technical silos. Moreover, technicians must want to learn how to thrive in the cloud and be willing to put that ahead of their technical specialties.

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- **Don't assume that apps management ends upon migration to the cloud.** Clients anxious to migrate their applications to the cloud often forget that existing applications management tasks don't simply end upon successful migration — they continue in a new context. For example, clients must maintain existing interfaces between SaaS applications and other systems, and break/fix and enhancement activities for custom applications may continue in the cloud model. Plan on this continuance and evaluate how responsibilities will change.
- **Keep a close eye on the moving target of ROI considerations.** In theory, any workload can be migrated successfully to the cloud if cost is of no concern. ROI can often represent the difference between what makes business sense and what does not. Recognize that this analysis is time-critical, in the sense that it is meaningful in relation to current business needs and current cloud pricing and features. Conditions will change, maybe drastically, so always reassess the landscape, including the economic factors, each time you make a decision. Seek tools to help automate this analysis because you will perform this exercise frequently. And be ready for an initial bump-up in costs at the beginning of the migration effort due to learning-curve and resource-related issues. Subsequent migration efforts will likely benefit.

What It Means

You'll Be A Service Broker As Well As A Service Supplier

I&O professionals construct the services they ultimately deliver to the business to win, serve, and retain customers from myriad building blocks. In the past, they built most of these components from scratch and then assembled them. Strategic rightsourcing changes the design and delivery models extensively. You'll build far less from scratch, but you still need technical skill and business acumen to do the assembly. Your future is bright, but it's very different from the past. Past practices and skills are already obsolete.

Competitive prowess now comes less from the technology blocks themselves and more from how you construct these parts into something more comprehensive and meaningful — the services. Involve the application developers in this design pursuit, as they must design the various application and infrastructure components to fit together. You optimize business value from neither just applications nor just infrastructure; design the two together as a unified service. Customers don't differentiate, so neither should you.

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Endnotes

[1] GE has been very open about its plans for cloud migration, including presentations by its CIO Jim Fowler at Amazon's re:Invent conference. Source: "AWS re:Invent 2015 Keynote | Jim Fowler, CIO, GE," YouTube, October 13, 2015 (https://www.youtube.com/watch?v=i1yW6vWCpgk).

[2] Forrester has argued that customers should not move their applications to the cloud in some cases. For more information, please see the "Don't Move Your Apps To The Cloud" Forrester report.

[3] Different cloud or cloud-like models have differing characteristics from both an operational and sourcing standpoint. Please see the "Cloud Sourcing Models Dictate Sourcing Strategy" Forrester report.

[4] The following report presents the current viability of options to migrate applications to cloud, including the so-called lift-and-shift option. See the "The State Of The Cloud: Migration, Portability, And Interoperability, Q4 2015" Forrester report.

[5] The following report covers how PaaS options are overtaking IaaS as preferred platforms for application development and migration. See the "Cloud Service Provider Categories Are Shifting: Here's Your Guide" Forrester report.

[6] Desire for flexibility is one of the principal reasons driving demand for SaaS. For an in-depth look at the demand for SaaS applications, please see the "Application Adoption Trends 2015: The SaaS Boom Continues As Businesses Demand Agility" Forrester report.

[7] Multisourcing, or a strategy to combine service deliver from multiple participating suppliers, relies on supporting service delivery and contractual structures to succeed. Many of the same principles expressed in service integration and management (SIAM) can be employed in the context of cloud services. For more information, please see the "Meet The Multisourcing Challenge" Forrester report.

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[8] The following report captures some of the contemporary security issues, including software-defined networking (SDN) and Forrester's virtual network infrastructure (VNI) vision. See the "Three Technical Innovations Will Ignite Zero Trust" Forrester report.

[9] Strategic rightsourcing evaluates various factors in helping guide decisions about which applications to move to the cloud. See the "Strategic Rightsourcing Application Portfolio Analysis Tool" Forrester report.

[10] The uneven handshake is a concept illustrating the different responsibilities placed on cloud service providers and their customers. For more detail on this concept, see the "The Truth Behind Enterprise-Class Cloud" Forrester report.

[11] Considering the impact of data proximity is one of a broad range of issues inherent in architecting for systems of engagement. For an overview of current strategies for implementing systems of engagement in your enterprise technology stack, please see the "Evolve Your Infrastructure Architecture For Systems Of Engagement" Forrester report.

[12] Strategic rightsourcing evaluates various factors in helping guide decisions about which applications to move to the cloud. See the "Strategic Rightsourcing Application Portfolio Analysis Tool" Forrester report.

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