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Start your modernization journey with migration to the cloud

FEATURING RESEARCH FROM FORRESTER

Top 10 Facts Tech Leaders Should Know About Cloud Migration

Start your modernization journey with migration to the cloud.

THE MOST SECURE, ENTERPRISE-GRADE CLOUD AT GLOBAL SCALE

Migration to the cloud is hard. There is no quick and easy, plug-and-play formula to follow. Each migration is different, and each migration takes time and resources. It is no surprise that only 20% of workloads have moved to the cloud, with 80% still running on-premises. The most common reasons for this are:

- Security and compliance concerns for business and mission critical apps
- Expansive geographic location requirements
- Lack of relevant skills in-house for migration and modernization

So, why then make the decision to migrate? Enterprises choose to migrate workloads to the cloud to capitalize on post-migration opportunities, most notably app modernization benefits. Organizations want to introduce new features and capabilities that will improve the user experience. They also want greater agility for the future to better respond to marketplace changes and evolving user demands.

What is the best and most efficient way to get through the migration process to begin realizing modernization benefits? The answer is, do your research and find an IT partner that will best support your migration needs.

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Source: The Total Economic Impact of IBM Cloud for VMware Solutions

IN THIS DOCUMENT

The most common use cases among these customers are:

- Hybrid cloud transformation
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- Risk mitigation and compliance readiness
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Having worked with hundreds of clients, similar to you, we understand the migration challenges ahead and constantly look for ways to provide transparency, offer best practices, and set the right expectations up front. We hope you will leverage this Forrester report to kickstart your cloud migration journey.

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Top 10 Facts Tech Leaders Should Know About Cloud Migration

Cloud Migration Is Both Common And Valuable, But Don't Expect Your Business Users To Care

by Lauren E. Nelson

March 14, 2019 | Updated: June 5, 2019

Why Read This Report

In 2015, cloud migration skyrocketed to the headlines as enterprises expanded public cloud plans to include existing applications. Fast-forward to 2019, and many enterprises actively consider migration to be part of their plans. Despite cloud's popularity, common misunderstandings plague organizations and create strife between IT and the business. This report provides clarity about cloud migration to infrastructure and operations professionals (I&O).

Key Takeaways

Migration Is Hard — But It's Here

Apps not built for cloud suffer performance decline when they migrate to cloud. Enterprises often need to deal with troubleshooting these issues.

Modernization Is Coming

Making larger changes to apps that are moving to the cloud can be resource-intensive. But if lack of modernization is a barrier to a capability, market, or improved customer experience (CX), enterprises are willing to invest in modernizing their core apps.

Repatriation Is Limited

Sensational reports overstate the popularity of repatriation and paint it as a massive move back to on-premises. It's not. For most, it involves a single app relocating due to unforeseen pain.

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by Lauren E. Nelson
with Glenn O'Donnell, Bill Martorelli, Jenny Thai, and Diane Lynch
March 14, 2019 | Updated: June 5, 2019

Cloud Migration Is A Harder Form Of Cloud Adoption

Cloud migration gained much popularity after Amazon Web Services (AWS) re:Invent in 2015 and a revolutionary speech by General Electric's (GE's) CIO, Jim Fowler.[1] Rather than focusing public cloud adoption on building new apps, Fowler referred to AWS as a preferred outsourcing option to host its existing applications. Prior to this, I&O leaders had disregarded cloud migration as hard, expensive, and detrimental to the performance of applications. The new storyline highlighted megacloud ecosystem benefits, reinforced outsourcing messaging, and, more importantly, promised that cheaper migration methods were no longer problematic and careful planning could mitigate the performance issues.

DECIDE WHETHER MIGRATION IS AN APP STRATEGY OR A DATA CENTER STRATEGY

After collecting hundreds of cloud migration stories, Forrester recognizes that enterprises view cloud migration from two vastly different points of view: 1) an application sourcing strategy or 2) a data center strategy. Depending on which lens they're using, enterprises build their business cases around different timelines, drivers, goals, and expectations (see Figure 1). Organizations may view cloud migration as:

- **An app sourcing strategy.** The goal is to optimize sourcing decisions for a full app portfolio. Typically, the scope of migration is limited to large packaged app hubs, subsets of apps with certain characteristics, or apps with location-based performance challenges. Major enterprise applications, e.g., SAP S4/HANA, commonly move to public cloud platforms with ongoing supplemental managed services support.[2] Business cases usually outline mitigated latency, improved experience, or lower operational costs to maintain the migrated workloads.
- **A data center strategy.** The goal is outsourcing as many apps as possible. The scale for this approach is large and usually tied to a "moment of change" (e.g., new executives, a data center refresh, a data center closing, or a contract ending). With such massive scale, these enterprises opt for less expensive migration paths and are more forgiving of performance drops that may occur during the initial migration. Data center strategists rarely complete migrations without the support of consultancies and tooling. Business cases usually rely on classic outsourcing benefits, cost avoidance, and reduced staffing (often through attrition) to justify the expense.

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FIGURE 1 Top 10 Facts Tech Leaders Should Know About Cloud Migration

1	Cloud migration won't have the same benefits as SaaS migration.
2	Business users don't care about cloud migration.
3	Cloud migration is hard.
4	Cloud readiness means scalable, resilient, and dependency-aware.
5	Mass migrations typically align to a moment of change.
6	Four paths exist for cloud migration.
7	Creating a cloud migration business case isn't easy.
8	Native platforms, consultancies, MSPs, and tools aid migration.
9	Hosted private cloud can be a less painful incremental step.
10	Repatriation happens, but it's an app-level decision.

FORRESTER'S TOP 10 CLOUD MIGRATION FACTS

Today, 76% of North American and European enterprise infrastructure decision makers consider migrating existing applications to the cloud as part of their cloud strategy.[3] This shockingly high figure is supported with powerful enterprise examples, including Allscripts, BP, Brinks Home Security, Brooks Brothers, Capital One, Chevron, The Coca-Cola Company, Dairy Farmers of America (DFA), GE, Hess, J.B. Hunt Transport, Kellogg, Land O'Lakes, and McDonald's.[4] Despite cloud's popularity, migration is still hard. It's still expensive. And it still requires due diligence to mitigate these factors. Here are Forrester's top 10 facts that I&O leaders should know about cloud migration:

1. **Cloud migration won't have the same benefits as SaaS migration.** When you adopt a software-as-a-service (SaaS) technology, you're using a new app designed specifically for a cloud platform. An app specialist is managing and updating that app. The new app has a new interface that your business users access and recognize as different. When you're migrating an app to a cloud platform, none of that is true. You're placing the same app in a generic cloud platform without the support of an app specialist. Any redesign requires your time, and the business user ultimately experiences the same app and interface. The best-case scenario is that performance stays the same and your business users don't notice. That's a lot less compelling than the case for SaaS.[5] Don't equate the two migration terms.

2. **Business users don't care about cloud migration.** If all goes well, your business users will experience the same app with no decline in performance. That isn't a very compelling story for business users. If your cloud strategy is supposed to inspire, don't focus your marketing on migration. Instead, focus on the elements of your cloud strategy that deliver new capabilities. Although its potential is powerful — in that cloud migration can clean up inefficiencies or release spend that might help fund new investments — the migration itself isn't inspiring. For enterprises with "cloud first" policies, cloud migration may involve a corporatewide awareness that requires technology professionals to engage with the business to help ensure a smooth transition.

3. **Cloud migration is hard.** Cloud platforms differ in a few fundamental ways from enterprise data centers; they use commodity infrastructure, extremely high average-sustained utilization levels, and minimal operational time per virtual machine (VM).[6] Consumers also get a financial reward if their apps vary resource usage as their traffic varies. Knowing this, enterprises have accordingly designed new apps to mitigate cost and obtain high performance. But for existing apps — as highlighted in cloud migration — this is much more difficult. Redesign or modernization, although ideal, is costly. Organizations can systematically solve these challenges, but learning these best practices can be painful. For critical workloads, the tolerance for mistakes can be low, especially when the advantages of the migration itself are less apparent to business users.

4. **Cloud readiness means scalable, resilient, and dependency-aware.** To ready existing applications for cloud, enterprises look at basic improvements that can make a big difference in a public cloud. They ensure financial alignment by making their apps scale, consuming fewer resources when they're less busy. Dependency mapping is another key step toward readiness, eliminating low-value dependencies and grouping applications into ecosystems to inform sets for the migration plan. More-thorough approaches break apps into services to increase application resiliency by eliminating dependencies within a single application. Migration discovery tools provide some readiness findings, including version updates, dependencies, financial implications, minimal application code and architectural feedback, and grouping suggestions.[7]

5. **Mass migrations typically align to a moment of change.** Rightsourcing decisions explore characteristics that favor cloud.[8] Mass migration (e.g., the migration of an entire app portfolio or a substantial number of apps), usually aligns to a "moment of change." This includes executive changes; acquisitions/divestitures; the end of colocation contracts; infrastructure refreshes; drastic changes in sourcing; and fear of, or experienced, disruption, any of which motivate significant and costly action at a specific point in time. Aligning to beneficial timing can make it easier to gain support, overcome barriers, or justify the economics behind a costly change. Almost all mass migrations align to one of these moments.

6. **Four paths exist for cloud migration.** You may hear references to "the six R's of migration" — rehost, replatform, repurchase, refactor, retire, and retain.[9] Occasionally, other favored "R" terms are mixed in — redesign, rebuild, refresh, etc. Forrester highlights four key paths to cloud migration: 1) lift-and-shift (minimal change and moved through replication technology); 2) lift-and-extend (rehosting

the app while making significant changes after the move); 3) hybrid extension (not moving existing parts of an app but rather building new parts in a public cloud); and 4) full replacement (complete or major rewrites to the application).[10] Each company uses multiple methods for migration. Lift-and-shift is less resource-intensive, as it involves little change; however, this may cause performance decline. Full replacement requires significant change and resources.

7. **Creating a cloud migration business case isn't easy.** Cost savings are hard to come by in cloud migration. Certain characteristics may make it easier to cut costs, such as shutting down data centers, eliminating painful inefficiencies, making minimal changes, and relying on minimal support for the migration. These may not be plausible or even recommended. Some of the more compelling business cases rely on cost avoidance, not cost savings (e.g., not buying new infrastructure). Creating your business case means cost, benefits, and future enablers, as defined by Forrester's Total Economic Impact™ (TEI) model.[11] Although you can support your documentation with any of the case studies noted above, it's impossible to create your business case before you've defined the scope of your migration or gathered data about the specifics of your applications.

8. **Native platforms, consultancies, MSPs, and tools aid migration.**[12] Cloud migration is a massive revenue opportunity for cloud platforms. As a result, major public cloud platforms have eagerly built out migration support services, tooling, and certifications.[13] Consultancies provide dedicated assistance to evaluate, plan, and migrate workloads, especially for massive migrations.[14] MSPs also assist in migration but largely focus on the ongoing management after the migration. Standalone discovery and replication software assist both self-run and supported migrations.[15] If you're looking for support, it's easy to come by.

9. **Hosted private cloud can be a less painful incremental step.** Hosted private cloud isn't the flashiest cloud technology. In fact, it falls short of public cloud capabilities and expectations in almost every way. However, it has three characteristics that deliver a practical solution for many use cases: 1) It's often built on VMware products; 2) it has dedicated options; and 3) it's managed by a service provider. For cloud migrators, it's far easier to migrate a portfolio of applications to a VMware-based cloud environment, isolated from other clients and partially managed to the OS or app so they can meet aggressive deadlines and stable performance more realistically. This approach can help control costs, avoid performance issues, and provide migration support to the public cloud, with the help of your hosted private cloud provider.

10. **Repatriation happens, but it's an app-level decision.**[16] Applications occasionally go in the other direction. The term repatriation started with cloud-negative origins to save reputation when an ill-advised cloud migration occurred prior to market maturity. More recently, it reflects a one-off sourcing change for an app when its characteristics change during the life of that workload and no longer are acceptable on a public cloud platform. Organizations undertake this effort only when the current state is painful — not simply inconvenient or slightly more expensive. Usually, it's regulation or significant cost escalation that would drive such a drastic change for an app. AI/ML is a common cost example.[17] Regulation-driven repatriation can mean that the scope of the application

has changed, the regulation has changed, or the company's approach to complying with regulation has evolved. Very rarely do we see complete strategywide repatriation, but when it occurs, it's large technology footprints or ASIC requirements (e.g., Dropbox) that drive this decision.[18]

Recommendations

Prepare Yourself For Your Migration Strategy

Start your cloud migration strategy off by educating your migration team, executives, and business users about how cloud migration fits into your larger cloud strategy. I&O professionals should use this report to help outline the key concepts to ensure better communication and accurate expectations. Moving forward, here are the steps you'll need to tackle:

- **Identify the best-fit scope.** Before jumping into cloud migration, first determine whether you're seeking gains at the application level or the data center level. This is the first stage of determining scope. For those seeking app-level gains, start with your application portfolio. Create your own sourcing framework.[19] This may include cloud readiness, variability, scalability, location challenges, dependencies, compliance requirements, data types, need for additional support, expected lifetime, and app satisfaction. For those seeking gains at the data center level, the framework will be similar but the results will heavily skew in favor of public cloud or SaaS migration as the preferred options. The framework itself may ask "why not" host in a certain solution rather than whether it's the best fit or optimized in that platform. Rather than app-level optimization, the goal is system-level optimization, where the enterprise data center is seen as a source of inefficiency.
- **Determine (and find) the support you need.** Support is expensive but valuable, depending on your scope, experience, and executive sponsorship. Most migrators leverage some level of support, whether it's tools, workshops, best practices, early guidance, or full migration support. After determining the right level of support, you'll need to decide the type of provider that will deliver it and which set of partners meets your needs.[20]
- **Obtain real estimates based on your own numbers.** The most common cloud migration inquiry question — "How much will I save from cloud migration?" — is impossible to answer accurately without inputs from your own estate. Your scope, current configurations, trust in autoscaling, anticipated changes, use of consultancies, cost avoidance, and team skill sets will all determine this figure. Each major cloud provider offers calculators. Each consultancy gives its own estimates. Before making definitive claims in your business case, get some real estimates and determine which costs won't be going away.[21]

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Endnotes

[1] Source: "AWS re:Invent 2015 Keynote | Jim Fowler, CIO, GE," YouTube video, October 13, 2015 (https://www.youtube.com/watch?v=i1yW6vWCpgk).

[2] Source: "Journey to the Cloud: SAP Strategy and Roadmap for Cloud and Hybrid Analytics Scenarios," SAP, August 2017 (https://www.sap.com/assetdetail/2017/08/ce6000a2-ca7c-0010-82c7-eda71af511fa.html).

[3] Base: 1,346 enterprise infrastructure decision makers from the US, Canada, France, Germany, and the UK. Source: Forrester Analytics Global Business Technographics® Infrastructure Survey, 2018.

[4] Source: "The Allscripts prescription for agility: Lift and shift to the cloud," Microsoft Azure (https://azure.microsoft.com/en-us/migration/customer-stories/allscripts/); "Dairy farmers use SAP on Azure to milk value from enterprise resource planning," Microsoft Customers, June 5, 2018 (https://customers.microsoft.com/en-us/story/dfa-consumer-goods-azure); "Coca-Cola North America," 2nd Watch (https://www.2ndwatch.com/case-studies/coca-cola-north-america-2/); "Feeding 10 Billion People," Cloud Technology Partners, April 19, 2016 (https://www.cloudtp.com/doppler/feeding-10-billion-people/); "Capital One on AWS," AWS (https://aws.amazon.com/solutions/case-studies/innovators/capital-one/); "AWS Case Study: Hess Corporation," AWS (https://aws.amazon.com/solutions/case-studies/hess-corporation/); "The Kellogg Company Case Study," AWS (https://aws.amazon.com/solutions/case-studies/kellogg-company/); "AWS Case Study: Brooks Brothers," AWS (https://aws.amazon.com/solutions/case-

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[5] See the Forrester report "The ROI Of SaaS."

[6] For more information on cloud migration, see the Forrester report "Your Three-Step Guide To Planning Cloud Migration."

[7] For more information on cloud migration tools, see the Forrester report "Now Tech: Cloud Migration Technology, Q3 2018."

[8] See the Forrester report "Portfolio Evaluation Is The Key To Migrating Applications To The Cloud."

[9] Source: Stephen Orban, "6 Strategies for Migrating Applications to the Cloud," AWS Cloud Enterprise Strategy Blog, November 1, 2016 (https://aws.amazon.com/blogs/enterprise-strategy/6-strategies-for-migrating-applications-to-the-cloud/).

[10] For more information on cloud migration, see the Forrester report "Your Three-Step Guide To Planning Cloud Migration."

[11] For more information on Forrester's TEI methodology, see the Forrester report "The Total Economic Impact™ Methodology: A Foundational Framework For Investment Decisions."

[12] An MSP is a managed service provider.

[13] Amazon offers AWS Application Discovery Service, AWS Database Migration Service, AWS Server Migration Services, AWS Snowball, and VMware Cloud on AWS and has also acquired replication provider CloudEndure and business case creator TSO Logic to further enable migration. Azure offers Azure Site Recovery, Azure Database Migration Service, Data Box, a migration calculator, and sample business cases. GCP offers Cloud Sprint, Transfer Appliance, Velostrata, and best practice documentation. Microsoft offers a Migration Center that lists a numbers of services. Source: "Azure migration center," Microsoft Azure (https://azure.microsoft.com/en-us/migration/).

[14] For more information on cloud service providers, see the Forrester report "Understanding The Cloud Services Provider Landscape."

[15] For more information on migration technologies, see the Forrester report "Now Tech: Cloud Migration Technology, Q3 2018."

[16] Repatriation is the movement of an application from a public cloud platform back to on-premises.

[17] ML is machine learning. For more information on AI in cloud, see the Forrester report "AI APIs In The Cloud Are Here."

[18] Source: "Why Big Enterprises Are Leaving Cloud For Other Tools," CXOtoday.com, May 16, 2018 (http://www.cxotoday.com/story/why-big-enterprises-are-leaving-cloud-for-other-tools/).

ASICs or Application specific integrated chips are used to accommodate large application ecosystems where infrastructure design can drastically effect performance or cost of the environment if used. Common examples include Facebook and other massive websites and mobile applications. Source: Ikuo Magaki, Moein Khazraee, Luis Vega Gutierrez, and Michael Bedford Taylor, "ASIC Clouds: Specializing the Datacenter," UCSD CSE, 2016 (http://cseweb.ucsd.edu/~mbtaylor/papers/ASIC_Cloud_ISCA_2016_Proceedings.pdf).

Source: Moein Khazraee, Luis Vega Gutierrez, Ikuo Magaki, and Michael Bedford Taylor, "Specializing A Planet's Computation: ASIC Clouds," IEEE Computer Society (https://cseweb.ucsd.edu/~mbtaylor/papers/micro_asic_cloud.pdf).

[19] See the Forrester toolkit "Strategic Rightsourcing Application Portfolio Analysis Tool" and see the Forrester report "SaaS Readiness Assessment."

[20] Forrester offers various types of reports to explore new technologies, including Now Techs, Forrester Tech Tides™, and Forrester Waves™. Source: "Frameworks & Methodologies," Forrester (https://go.forrester.com/research/frameworks-methodologies/).

[21] Forrester has a tool that highlights areas of cost that often don't go away when moving to the cloud. Don't depend on these items to justify your investment if you can't realize them. See the Forrester report "Brief: The Cost Of Migrating An Enterprise Application To A Public Cloud Platform."

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