

# Lift & Extend

Pragmatic Keys to Establish a Virtuous Circle for your Cloud Adoption Strategy



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**W**hile a few large companies like Johnson & Johnson got the rid of all their Mainframe-based applications and expect to run more applications in the Cloud than they currently do on their own infrastructure, the great majority of the Forbes Global 2000 organizations are still stuck at the beginning of the journey. If these large shops have initiated their move to the Cloud to reduce infrastructure costs, they'll soon be confronted with technological, cultural and psychological hurdles which may hinder them to take full advantage – cost reduction, but also business value – of the Cloud.

No, the Cloud journey doesn't stop with the Lift & Shift of your legacy applications running on VMs. No, the Cloud shouldn't be only for new projects which will use innovative PaaS workloads for IoT, Big Data or Blockchain payments. No, the Cloud doesn't mean making your Dev work better with your Ops. Cloud is more than that - it is a disruption and a paradigm shift of both technology and culture. And those who will smartly and progressively pivot on a global scale today will be tomorrow's leaders in their respective markets and industries (see what is currently happening in Financial Services with the FinTechs).

This document lists the key thoughts and steps that large organizations should implement across their application portfolio and teams, in order to establish a strong virtuous circle that will support their Cloud migration strategy that can scale globally. It's a Cloud adoption framework we could summarize in two words: Lift & Extend.

## About the author



Michael Muller – Product Owner of Cloud-Based Software Analytics and Benchmarking solutions at CAST – is a 15-year veteran in the software quality and measurement space. His areas of expertise include product management, application portfolio management and software quality measurement. As part of his scope, Michael manages CAST Highlight and Appmarq, and is part of the CAST Research Labs analysis team that generates the industry-renowned CRASH reports.

# Place the Application Landscape at the Core of your Cloud Adoption Strategy

Like for any strategy building process, you'll need to constitute a comprehensive, fact-based and systematic evaluation of your application landscape in order to know whether each application is a better candidate for IaaS, PaaS, SaaS or to eventually decide which application won't be part of your future application landscape.

This application landscape assessment should address the following areas:

- **Business Impact:** target the applications with the current highest impact from a business perspective (alignment with the strategy, end-user audience, resiliency constraints, etc.)
- **Supported Business Capabilities:** identify the business capabilities (customer relationship, contracts, orders, sales & marketing, employees, financial management, etc.) that the applications currently support
- **Innovation Requirements:** Measure the appetite for the applications to consume innovative Cloud services (performance scalability, high data availability and storage, IoT, Big Data, IA, etc.). In other words, the need to leverage Cloud services as a competitive advantage
- **Organizational & Technical state of applications:** actual development and maintenance effort, team operational model, skills and resource allocation, software health KPIs

The output of this inventory results in a clear understanding of how to position the present application landscape, in regard of your business strategy, specificities and requirements, as pointed out by AWS with its 6 R's of a Cloud Adoption Strategy:

- **Re-host:** lift & shift applications, virtualize the underlying infrastructure (IaaS)
- **Re-platform:** moving non business-centric components of an application to PaaS (e.g. PostgreSQL, Tomcat as a Service, Cloud-based middleware)
- **Repurchase:** replace the application by a COTS product (SaaS)
- **Refactor:** re-architect and modernize the application to make it run Cloud-native functionalities (transformation of business-centric components to PaaS)
- **Retire:** eliminate obsolete applications
- **Retain:** status quo, decide later

# Take the Full Advantage of Cloud Cost Reduction with Containerization as a Service

Today, many IT departments think they're done with the Cloud journey since they achieved the "lift & shift" of their applications to IaaS. Of course, they succeeded in virtualizing their infrastructure by making applications run on VMs, which significantly reduce on-premises infrastructure cost and effort. However, stopping the Cloud journey here could be very limiting:

- **Application resource duplication:** Because in a Lift & Shift approach, the Operating System and application resources are replicated on each virtual machine
- **Infrastructure resource waste:** The CPU, memory and storage space is defined upfront at the VM level and cannot easily be adapted to the real application needs (especially when the audience peak is not predictable or constant over time)
- **Lack of flexibility:** VMs cannot be easily manipulated across on-premises, private, public or hybrid, Linux/Windows Cloud environments

	On-Premise	IaaS	CaaS	PaaS	SaaS
Applications	■	■	■	■	□
Data	■	■	■	■	□
Runtime	■	■	■	□	□
Middleware	■	■	□	□	□
OS	■	■	□	□	□
Virtualization	■	□	□	□	□
Servers	■	□	□	□	□
Storage	■	□	□	□	□
Networks	■	□	□	□	□

Balance of responsibility between ■ the Customer and the □ Cloud Service Provider

In order to really take full advantage of Cloud's cost saving opportunity, operation and provisioning flexibility, legacy application containerization (also known as CaaS for Container as a Service) should be strongly considered. This step further in the Cloud journey abstracts infrastructure (physical or virtual) resources and provides the following advantages:

- Higher scalability and lower operating expenses: the underlying running environment (OS, middleware, libraries, technology stacks, etc.) can be mutualized between different containerized applications, infrastructure resources are smartly consumed (elastic consumption that avoids waste of CPU, memory and storage)
- Easier reuse and deployment of safe and up-to-date components for a smarter application lifecycle management
- Better time to market (shorter delay between feature implementation, integration and deployment in production)

In addition of these immediate gains, CaaS offers one of the greatest opportunities to reconcile Dev and Ops teams, working closer together on common and shared concepts, practices and tools (DevOps, implementation of CI/CD pipelines, Docker, Kubernetes, Apache Mesos, etc.). This is a mandatory aspect for those applications that are envisioned to go to PaaS.

The articles below will help you better understand the value of CaaS for your organization and how to work with containers:

- ***"CaaS as your new platform for application development and operations"***  
By Betty Junod (Senior Director Product Marketing at Docker)  
Read the article on [Docker.com](https://www.docker.com)
- ***"Cross-Platform Hybrid Cloud with Docker"***  
By Chanwit Kaewkasi (Maintainer at Docker Swarm Project)  
Read the article on [Medium.com](https://medium.com)
- ***"Relation of Middleware to Microservices, Docker, and Cloud-Native Architectures"***  
By Kai Wähler (Technology Evangelist at Confluent)  
Read the article on [DZone.com](https://dzone.com)

## Launch New Projects as PaaS/Cloud-Native

Starting any new project relying on PaaS by nature is an absolute no brainer and should be the rule, in order to build Cloud-native services, and progressively transform the application landscape by decreasing the proportion of on-premises systems. That said, there are some key items to consider in order to maximize the modernization acceleration effect of legacy applications:

- **Compose your dream teams:** the project members you'll cast will be the internal ambassadors of your Cloud Adoption Strategy. Obviously, they should be selected for their technical skills on Cloud technologies and concepts, but also for their ability to communicate and advocate for embracing the DevOps culture. Since the average age of people involved in application development and maintenance can be around 50, especially for Mainframe-based applications, getting the momentum could be somehow challenging and may require negotiation and patience.
- **Build & Promote the PaaS case:** communicating on your first PaaS-native projects will be key for a broader Cloud adoption. It is key to frequently inform stakeholders and other project teams how this move to PaaS positively impacts application intelligence
- **Talent acquisition & retention:** the need for Cloud talent is also extremely high in other companies (including your competitors). Work with your HR to make sure these profiles are recognized and compensated for the value they will bring to your organization. They're not just DevOps newbies, they're handling your future IT business.
- **Outsourcing:** if you decide to outsource these implementations for some economic reasons, it is important to baseline software health factors and to monitor them over time, in order to ensure the innovation value that is brought doesn't introduce new risks and quality issues that may, at the end, decrease the whole value of PaaS

# Establish a Business-Centric PaaS Migration Roadmap of your Application Portfolio

Once you identified the set of applications you'll modernize to make them use Cloud-native services, it is important to plan and coordinate this transformation over time. Depending on their business, economic and technical KPIs, and since moving your applications to PaaS means significant effort and organizational changes, four Cloud migration categories can be established:

- **Quick-Wins:** these applications are identified as being technically easily moveable to PaaS but their contribution to the business is not significant. Quick-wins are an opportunity to validate and communicate internally on the benefits of PaaS, at an early stage of your Cloud journey
- **Cloud Core:** the applications that constitute the core part of your Cloud journey, defined by a) their high impact on the business; b) their technical state (low adherence to the underlying OS, no usage of middleware, etc.); and c) organizational (e.g. Agile and DevOps culture, practices and tools in place) abilities to easily be moved to PaaS
- **Long-Term Bets:** the hard part of your Cloud journey is composed of applications that contribute to the business but for which a great variety of organizational and technical hurdles can be found. Their migration to PaaS should be closely monitored, coached by the PaaS *"dream teams"*, who successfully migrated the *"quick-win"* applications. Said differently, pushing first these applications would be counter-productive and risky for your Cloud Adoption Strategy
- **Pursue Later:** with a relatively low business value and a high number of technical blockers for a migration to PaaS, these applications should be positioned in the long tail of your Cloud journey

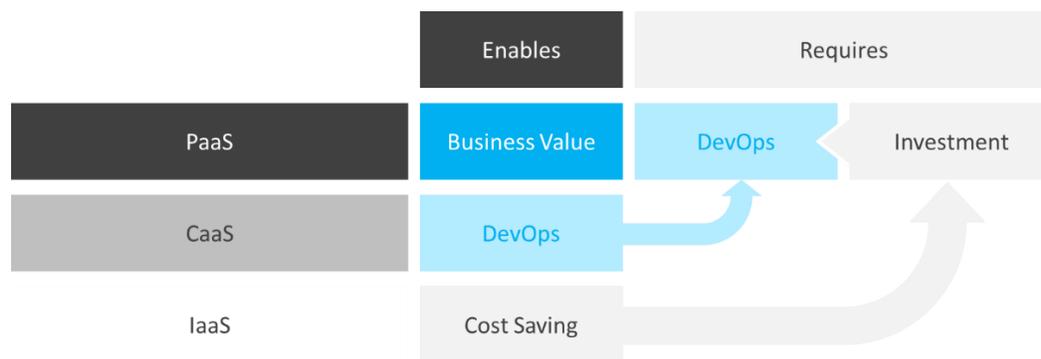
In addition, keep in mind that thanks to the mapping between an application and its supported business capabilities (as described earlier), the PaaS migration doesn't necessarily need to be a "big bang" approach. Some parts of an application can be ported to PaaS, while others remain on-premises or running in IaaS.

# The Cloud Virtuous Circle: When Cloud Savings Finances the Cloud Value

As we explained earlier in the pages above, moving your application landscape to a Cloud-based infrastructure can act as an immediate cost reduction factor, liberating IT resources, even with a pure IaaS “lift & shift”. The CapEx portion of the IT budget decreases in favor of the OpEx that globally creates new investment opportunities.

We also described why a containerization of the application landscape (CaaS) is the compelling event that maximizes the Cloud economics and how it paves the road for a tighter conversation between development teams and IT and introduces an organizational disruption where Dev & Ops are part of the same application team that builds, deploys, delivers and operates applications.

Because not all applications necessarily require more intelligence, the PaaS migration of the application landscape is not a 1:1 effort. The cost reduction created by the containerization of 80% of the portfolio will finance the PaaS migration effort of 20% of applications, which will dramatically increase the business value of your systems.



## About CAST Highlight

CAST Highlight is a SaaS platform for fast & code-level Application Portfolio Analytics. Track software value & risks to align IT decisions with your business strategy. Highlight supports a wide variety of technologies, including Java, COBOL, SAP/Abap, .Net, Python, PHP, PL/SQL, Objective-C & more.

### Build your smart Cloud Migration Roadmap with Fact-Based Software Analytics

Developed with some of the smartest cloud experts across the globe, Highlight helps you quickly and objectively assess your application portfolio for PaaS migration. It automatically builds your migration strategy by identifying where to start, quick wins, and applications that will take longer to migrate. Where a Cloud expert could spend weeks to measure the capability for a single application to move to PaaS, Highlight CloudReady makes it possible on the entire portfolio – in only days.

More information at [casthighlight.com](https://casthighlight.com)

