



Embracing Containers & Microservices for future-proof application modernization



The need for application modernization:

Legacy applications are typically based on a monolithic design, which is organized in a three-tier architecture that covers a front, middle, and end layer. These monolithic designs reduce flexibility and agility due to the way it is compressed and leads to challenges in scaling as per business requirement. This challenge has resulted in modernizing these legacy applications using Containers and Microservices.

Modernizing the applications using containers and microservices reduce the complexity of the applications by leveraging container concepts. Maximum portability, automation, better security and governance are achieved by placing the services around the containers rather than within the containers. These containerized applications can be run without dependencies or without requiring any virtual machines. These dependencies are eliminated by containers as it runs on its own operating system.

How to select the right applications for modernization:

We need to evaluate the existing legacy applications before adopting containerization. All legacy applications may not be a right fit for containerization.

Conduct an assessment before adopting containerization and try to look at the best fit options. It is better to avoid very old applications that are built using outdated languages such as Cobol, Fortran, and mainframe-based apps. Applications that are poorly designed will require more work to get them cloud-ready. If the applications require a complete modification, it may be easier and cost-effective to start a new application. Applications that tightly couple to the data store is another poor choice for migration to the cloud using containers and services because we need to decouple the data from application layer and redo most of the work.

Containers enable developers to fully “own” the setup and configuration of their app’s runtime environment. The build pipeline prepares a container, which will then be placed in the various environments (e.g., pre-production environments such as integration testing and load testing, and then on to the production environment) of the deployment pipeline. It can simplify the DevOps deployment tool chain, which no longer needs to differ based on the nature of the runtime artifact (e.g., PHP vs JVM). All runtime differences are encapsulated within the container.



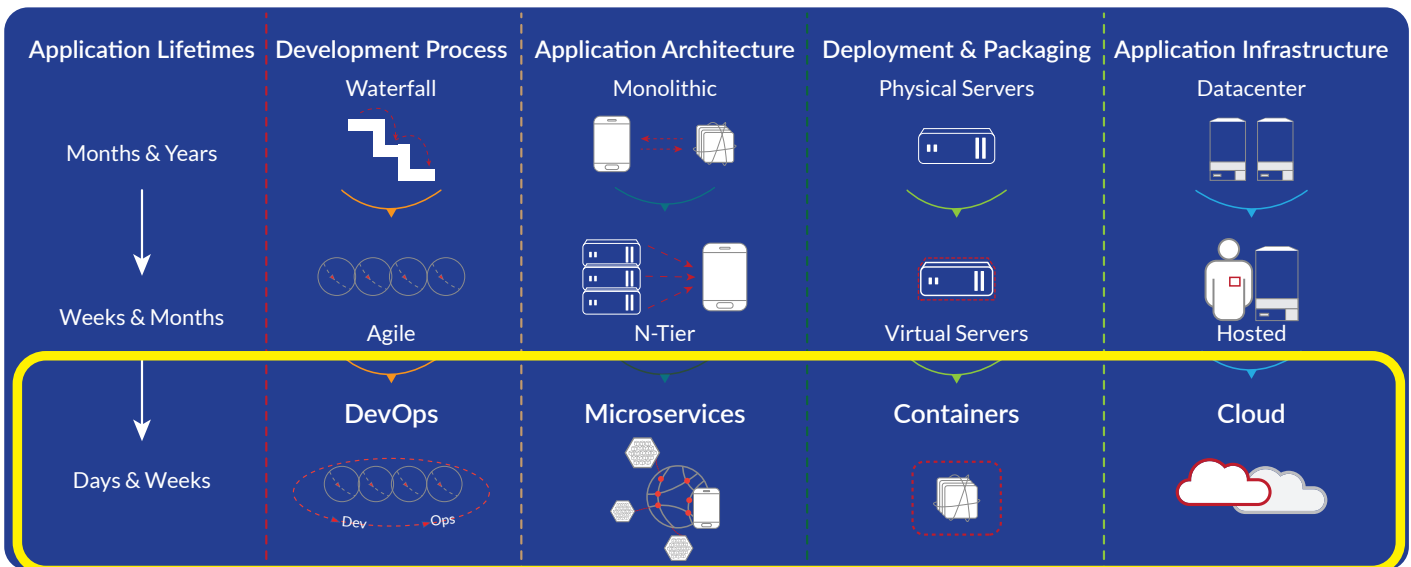


Why modernize?

Need of the hour is to meet business requirements, which are strongly dominated by digital transformation and digital disruption the world is going through. It is a phase where we must move from legacy systems and processes to newer technology space, which will create a positive impact on the business. At the core of this digital disruption, application modernization to meet business demands is inevitable. Containers and Microservices is the best suggested way to travel in the right direction to be on par with the change that the technology industry is going through.

Containerization and Microservices help in independent operation scalability, unparalleled system availability, and introduction of new services at a rapid speed without going through massive reconfiguration. This in-turn increases delivery speed and improves safety in the form of scalability and availability of our environment.

Below diagram illustrates how Containers and Microservices influence application life cycle.



Benefits of Containers and Microservices based architecture:

- Removal of dependencies between teams, resulting in faster code to production
- Multiple initiatives to run in parallel
- Supports multiple technologies/languages/frameworks
- Enables smooth and graceful degradation of service
- Promotes ease of innovation through disposable codes

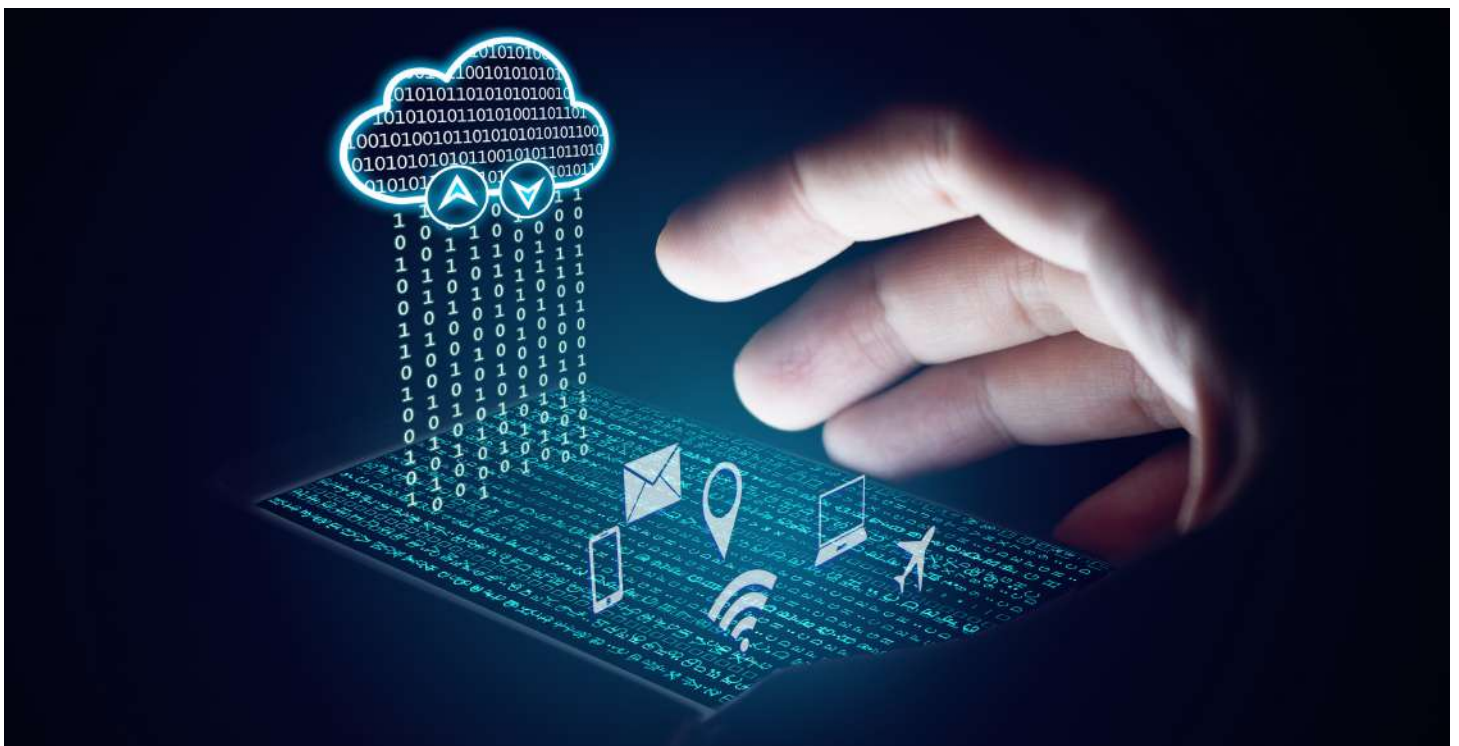


Deriving business value:

Use of microservices architecture ensures faster software delivery, which is essential for staying ahead of competition and achieving sustainable growth. Following are the key business values that drive delivery speed and higher availability:

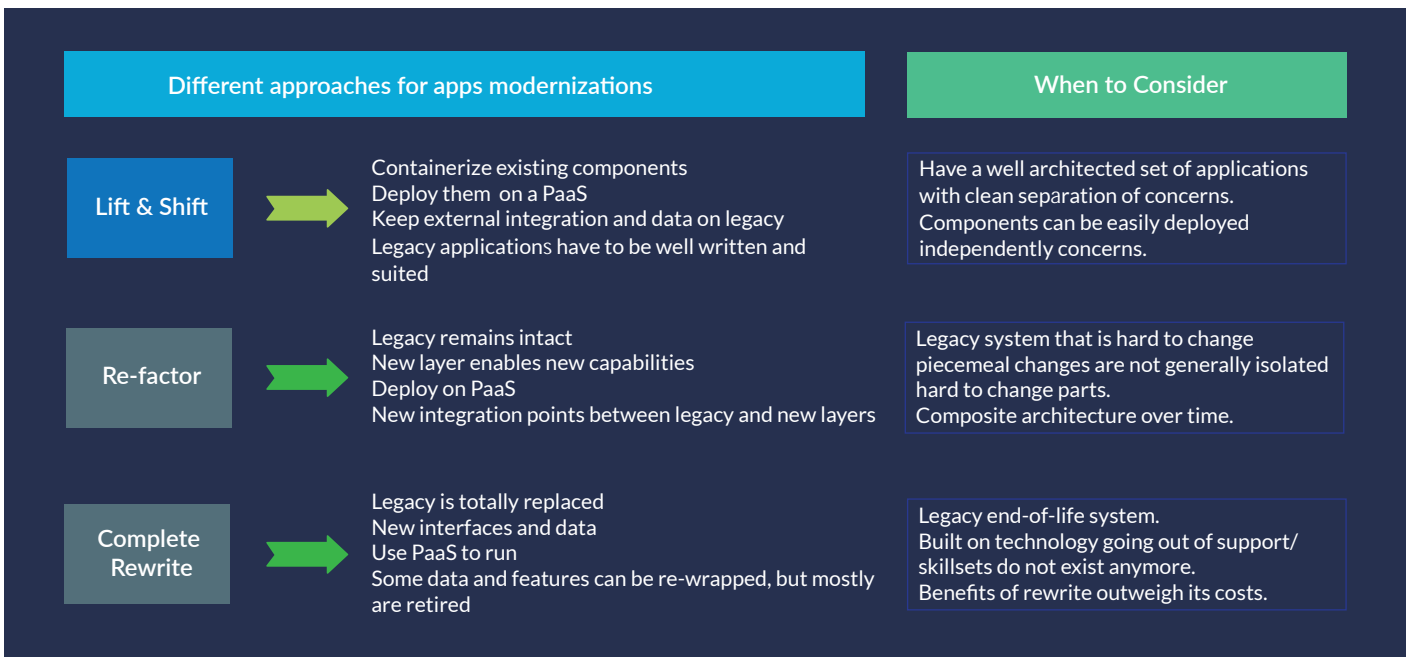
- Agility that enables organizations to deliver new products at a faster rate with better efficiency
- Reduces development time through reusability over time
- Allows new resources to come up faster through simplified development planning, which increases the accuracy as well
- Provides more options for pilot and prototype through independent deployment of components
- Encourages teams to build more complex products and features iteratively
- Use of the right tools for the right task ensures speedy response
- Reduces infrastructure costs and risk of outages due to capacity issues
- Stronger resilience and higher availability

Scalability allows the software to grow or shrink with business requirements. We need to evaluate our requirements, based on which we can design our microservice architecture by looking at business objectives combining potential benefits of microservice architecture.





Apps modernization options:

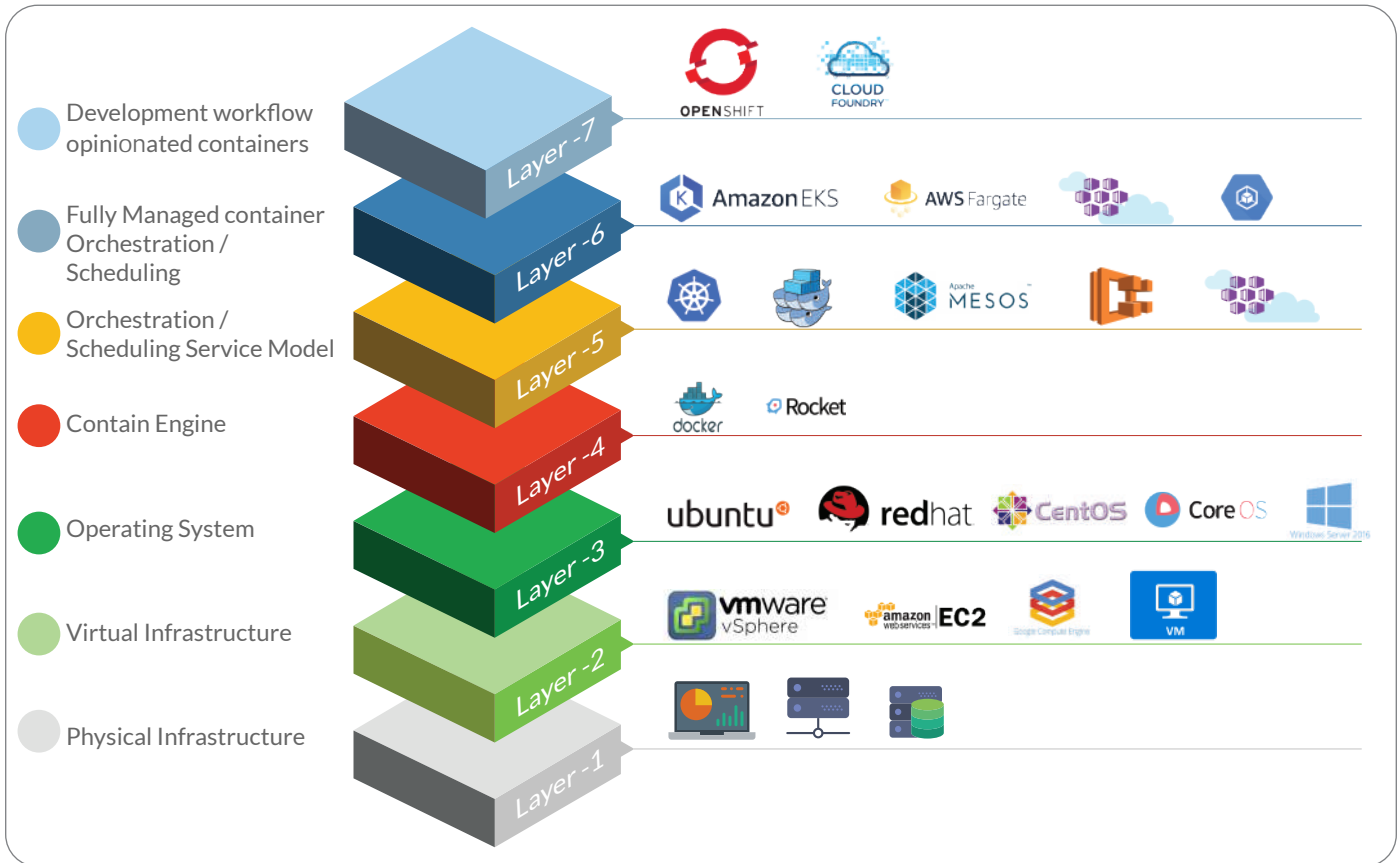


We need to consider the following aspects while onboarding an existing apps on to container platform.

1. Check possibilities to onboard existing apps on to containers - This can be natively placed on docker containers. Containers would then be run natively within the PaaS or container platform, using the native scheduler within the platform.
2. Check possibilities to on-board existing application with minor modifications. Make use of service-broker, Edge Gateway or API service while accessing applications. Some existing applications, such as legacy databases or services running on a mainframe, should typically remain unchanged and only be accessed through a service-broker within the platform.
3. If option 1 and 2 is ruled out then we need to look at the option to rewrite application completely and this will be slightly expensive, and efforts needs to be put in and need to have proper risk management plan. Benefits of rewrite will enable Organizations to deliver new products faster and more efficiently. This recovers initial cost and efforts in couple of months' time.



Different options available for Containers and Microservices architecture for apps modernization:



Containers: Common and widely employed examples of containers include Docker, a Linux-based open-source implementation supported by software companies such as Canonical, Red Hat, and Parallels. Established PaaS services including Google App Engine, Red Hat Open Shift, and VMware’s Cloud Foundry, also make use of Linux Containers (LXC) technology.

Container Orchestration: Docker Swarm, Kubernetes, Apache Mesos, AWS ECS, Azure ACS

Fully Managed Container Orchestration Services: AWS EKS, AWS Fargate, Azure AKS, Google GKE

Development Workflow Opinionated Containers: Redhat OpenShift, Cloud Foundry



Role of Containers and Microservices in digital transformation and the way forward

As CaaS (Containers as a Service) is set to transform the IT space, its success will also depend on technology, process, and people who are aligned with this transformation. According to industry experts, USA has already started adopting containerization as a service and making its headway into modernizing legacy applications. This is followed by Europe, Asia Pacific, and MEA as well.

Considering this rapid change and evolution of Containerization and Microservices, Marlabs, a digitally driven IT solutions company based out of Piscataway, NJ. Offers frameworks to help customers achieve application modernization through Containers and Microservices. Marlabs with 20+ years of experience in development, can help build projects faster with less complex systems allowing quick repairs, updates or upgrades with limited to no downtime. Marlabs works with customers to ensure that applications are built in the simplest and most efficient way possible using Microservices and Containers leveraging Agile, DevOps and other best in class processes, tools, and technologies.



About Marlabs

Headquartered in New Jersey, United States, Marlabs was founded in 1996 to deliver innovative business solutions. Today we leverage digital technologies such as cloud, mobile, analytics, Internet of Things and social and help businesses with their digital transformation journey.

With a dedicated team of over 3,000 associates, we service 100+ blue-chip clients across different verticals. Our network of delivery centers in USA, Canada, Mexico and India, and strong partnerships with industry leaders, allows us to offer a wide range of IT services across industries.

Our certifications comprise CMMI Level 5, ISO 27001 and SSAE 18 Type 2 SOC 1 best practices. These certifications and our customer-centricity ensure that our customers get only the very best of services every time.



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