

**Download the current version of
the Application Modernisation Field
Guide**



<https://www.ibm.com/cloud/garage/content/culture/app-modernization-field-guide>

App modernisation is inevitable

Business pressures demand faster time to market and app modernisation. Your existing estate determines the best approach to modernisation. Containers, Kubernetes and microservices are proven to deliver speed and simplicity and are being adopted rapidly. IBM® can make this easy for you.

MODERNISATION PROVIDES IMMEDIATE BENEFITS

Accelerate digital transformation. App modernisation is driven by the need to transform business to build new capabilities and deliver them quickly.

Improve developer productivity. Enabling self service for developers through adoption of cloud native and containerisation.

Improve operational efficiency and standardisation. DevOps enablement drives a culture of automation and transformation of operations.

What's inside?

This field guide provides a high-level overview of IBM's application modernisation approach.

LEARN IT

A summary of the concepts.

GET STARTED

Tips to start the journey to modernise your apps.

IBM's unique approach

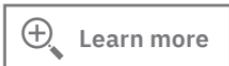
Rewriting your entire estate is a pipe dream. Modernisation comes in many flavours. IBM's skills and experience in middleware provide unique insights and approaches to modernise your existing estate with speed, confidence and reduced risk. View your development investments as an asset, not a liability.

REFACTOR WHAT'S NECESSARY, BUT DON'T NECESSARILY REFACTOR

Think. More than a simple, one-size-fits all approach, IBM provides flexible guidance you can trust.

Transform. Manage risk by choosing the right approach to modernise your current estate. Accelerate your journey through automation and technology.

Thrive. Get ahead of your competition by improving your DevOps efficiency.



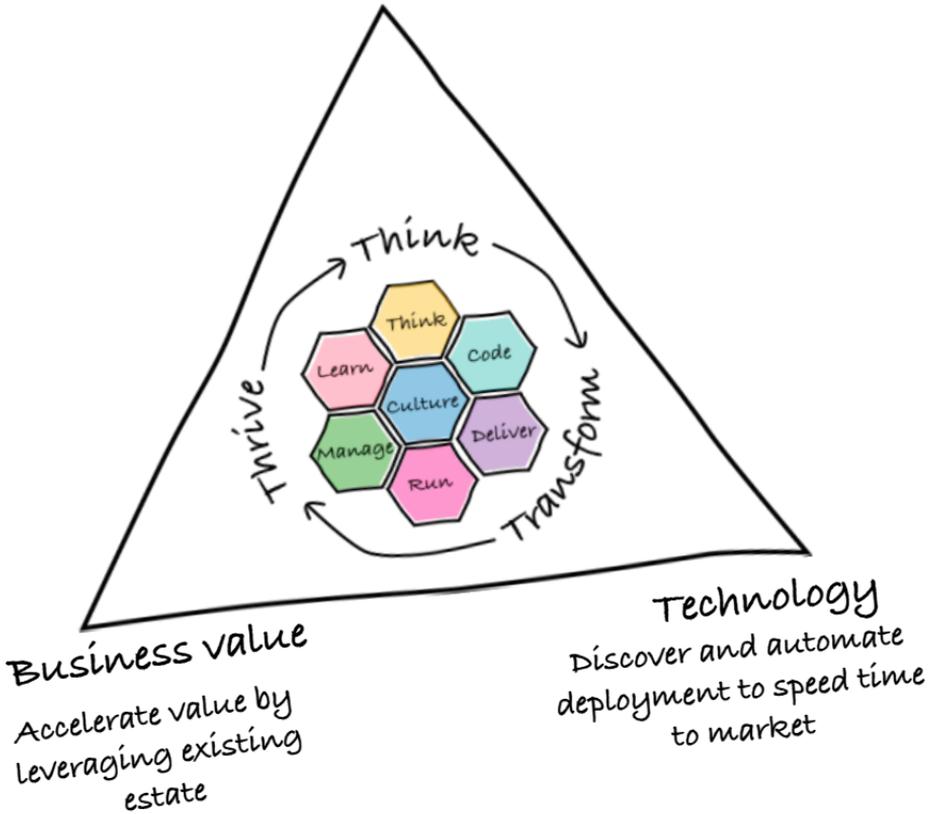
Check out the IBM Cloud Garage Method website.

<https://www.ibm.com/cloud/garage>

Modernise your applications quickly and safely using our accelerators and tools.

Prescriptive Guidance

An approach you can trust based on a proven method



IBM is a trusted partner, providing technology and prescriptive guidance to deliver immediate business value.

Modernisation journey

To get started on your modernisation journey, you must understand the approaches that are right for your inventory. The IBM Transformation Advisor helps you select the best entry point to deliver value at each step in your journey. IBM can assist you in understanding the path that is right for you.

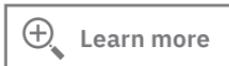
CHOOSE THE APPROACH THAT BEST FITS YOUR NEEDS

Containerise the monolith. Reduce costs and simplify operations.

Expose on-prem assets with Application Programming Interfaces (APIs). APIs enable legacy assets that are difficult to cloud enable.

Refactor into macroservices. Break down monoliths into deployable components.

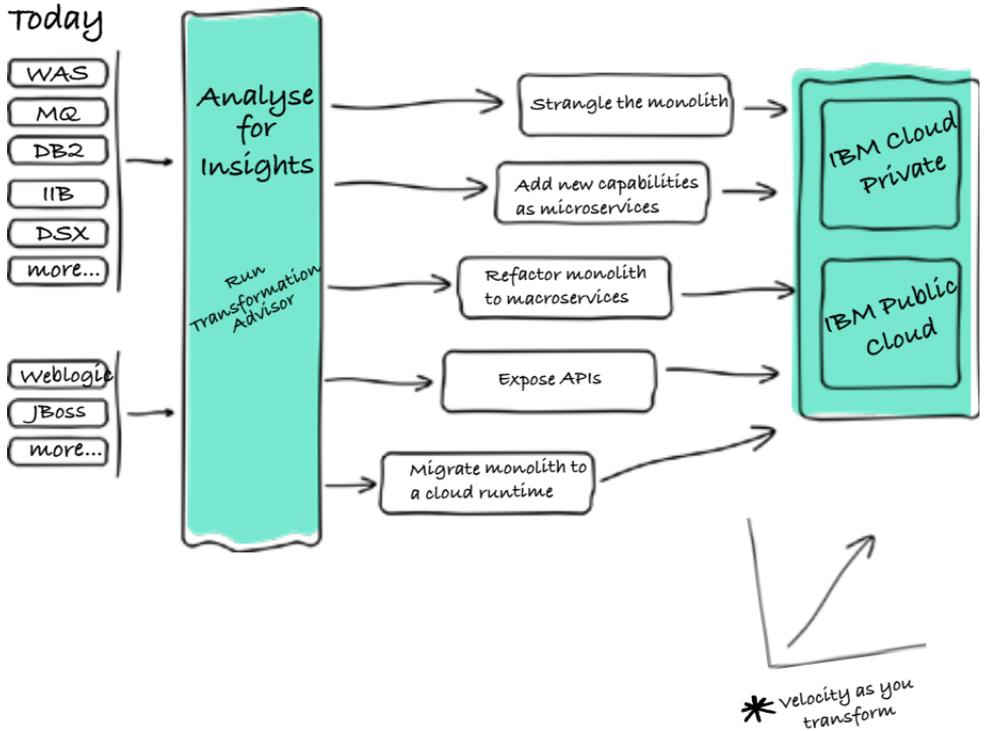
Add new microservices. Innovate incrementally and establish success early.



Check out the IBM Transformation Advisor tool.
<https://developer.ibm.com/app-modernisation>

Mix and match your approaches as needed!

Transformed



Increase your delivery velocity along the journey.

Assess your app portfolio

Before tackling the job of modernising your applications, you need to understand your application inventory and how it aligns with business priorities. This will help you determine the best technical path to modernisation and evaluate the effort required.

APPLICATION MODERNISATION IS BUSINESS MODERNISATION

Align to your business priorities. Understand where your business needs are driving you to modernise.

Take inventory of your apps. Run IBM Transformation Advisor to collect information from your existing environment and recommend modernisation activities.

Spend your modernisation dollars wisely. Make better decisions by understanding how your application portfolio aligns to your business priorities.



Check out the IBM Transformation Advisor tool.
<https://developer.ibm.com/app-modernisation>

Advice based on IBM's expertise!

Recommendations that reflect your inventory

IBM Transformation Advisor

Data Collector user preferences Recommendations
Source environment: IBM WebSphere Application server

Application	Recommendation	Complexity	Technical match (%)
emailcomponent.ear	Liberty on IBM Private Cloud ✓ Cloud location ✓	Simple	100%
inventorymain.ear	Liberty on IBM Private Cloud ✓ Cloud location ✓	Moderate	80%
catalog002.ear	Liberty on IBM Private Cloud ✓ Cloud location ✓	Complex	100%

Get expert tailored advice about your modernisation options.

Classify your app portfolio

Classify your application modernisation portfolio by choosing an optimal combination of modernisation techniques and effort required to meet the business outcomes.

NOT ALL APPLICATIONS ARE CREATED EQUAL

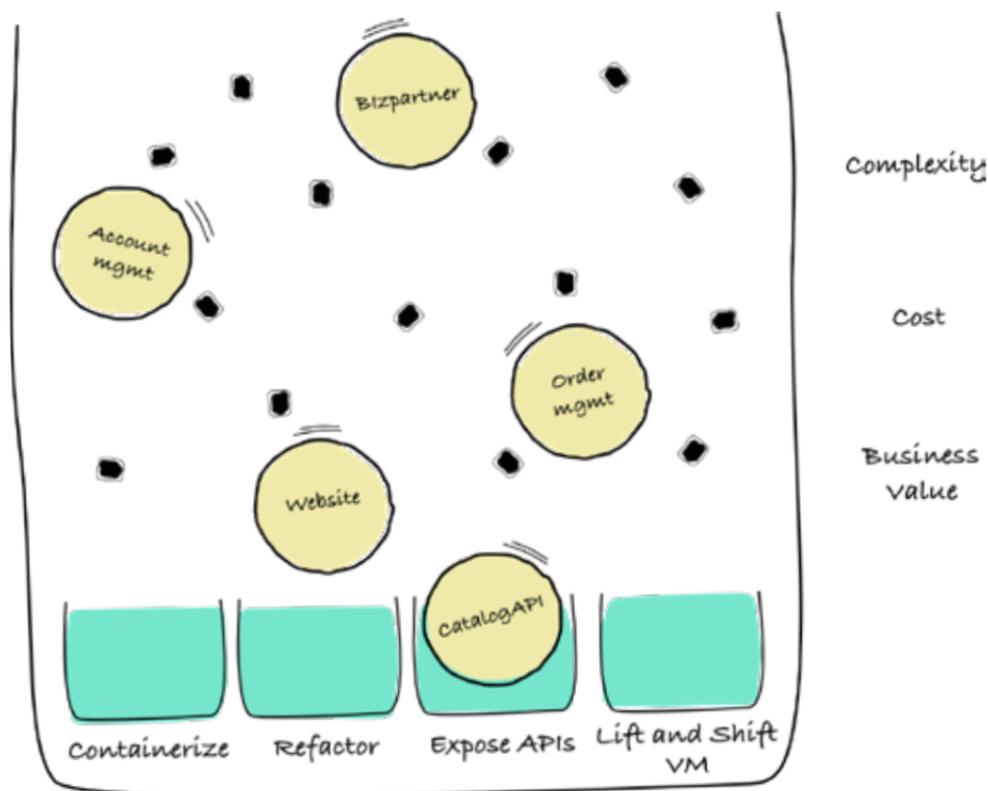
Simplify. Run the IBM Transformation Advisor to gain clarity on your modernisation options.

Understand effort, cost and outcomes. Evaluate all possible modernisation options.

Classify your modernisation portfolio with confidence. The secret sauce behind Transformation Advisor recommendations is a built-in cognitive engine based on real life IBM modernisation experience.



Check out the IBM Transformation Advisor tool.
<https://developer.ibm.com/app-modernisation>



Modernisation approach depends on your application code timeline and appetite for risk.

Plan & prioritise

Plan your modernisation based on matching effort to business priorities. Identify quick wins that are shovel-ready to move immediately. Choose the right modernisation strategy driven by your business needs.

“IF YOU FAIL TO PLAN, YOU ARE PLANNING TO FAIL!”

- BENJAMIN FRANKLIN

Prioritise. You must balance both time and business priority. Low priority projects are good learning vehicles, but might not drive as much real business value.

Quick wins. Quick wins are important to reassure stakeholders and justify investment for longer-term projects.

Perfect match. Your first few projects should be both short in duration and high in potential business value. Starting with the longest, hardest project can lead to a loss of confidence about the overall outcome before value is realised.



Check out the IBM Cloud Adoption & Transformation Consultancy.
<https://www.ibm.com/cloud/garage/adoption/cloud-adoption-and-transformation>

Show success early with quick wins! Start small and expand.

Apps	Complexity	Cost	Business value	Plan order
Website main	5	3	2	2
Account management	3	2	4	3
Catalog API	1	1	1	1
Order management	9	7	3	4
Business partner	7	5	5	5

* Quick Win!!!!

Modernise with a plan.

Establish the foundation

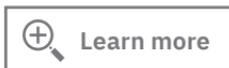
Container platforms, like Kubernetes, provide the foundation for app modernisation. This open source-based container management system targets both development and operations staff. With containerisation, developers can treat configuration as code to enable a modern DevOps toolchain. IBM provides a consistent container platform for application modernisation across IBM Cloud - both public and private.

CONTAINERS - THE FOUNDATION FOR MODERNISATION

Kubernetes-based platform. Container orchestration is the starting point. A strong foundation with resiliency and security in the forefront is essential.

Containerised middleware and services. Prebuilt container images and Helm charts can greatly accelerate your containerisation.

Automate. You need capabilities to orchestrate existing Virtual Machines (VMs), new finer grained deployment pipelines and new operations stacks.



Check out IBM Cloud Private.

<https://www.ibm.com/cloud-computing/products/ibm-cloud-private/>

Integrated DevOps & Management

Open DevOps Toolchain | Hybrid Cloud Management

Cloud Optimized Software & Services

Microservices | Cloud Foundry | Middleware
Data | Analytics | Machine Learning | Blockchain

Kubernetes-based Platform

Developer Productivity | Operational Efficiency
Catalog | Built-in Elasticity | Multi-tenant | Consistent Management
Open Technology | Runs anywhere

Flexible Choice of Infrastructure

VMware | OpenStack | Hardware

Foundation for App Modernisation

IBM realises containerisation through the IBM Container Service and IBM Cloud Private, based on Kubernetes.

Containerise your apps

Wrapping an application in a Docker image is a good first step toward modernisation, but many applications are not optimised for containers. Load balancing, application state handling and monitoring are different in containerised applications. As a result, you might need to rewrite portions of your applications. Likewise, performance tuning and DevOps processes must be aligned to containers.

YOU WRAPPED YOUR APP IN A DOCKER IMAGE - NOW WHAT?

Adapt your applications. You need accelerators to adapt your application to a containerised environment. IBM provides prebuilt containerised middleware and services and prescriptive guidance.

Modernise your DevOps and Configuration. IBM provides tools that automatically generate pipelines for new applications as well as orchestration tools that automate configuration.

Modern Operations. IBM provides out of the box management and monitoring based on open technologies.



Check out the microservices architecture.

<https://www.ibm.com/cloud/garage/architectures/microservices>

Before

Existing
middleware
WAS

Existing
operations

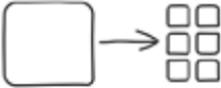


Containerized
middleware
WAS on
Docker

Pre-integrated
DevOps
Jenkins
urban(code)
deploy

After

Refactor to
Microservices



Integrated Dashboard

Nodes	Storage	Apps
89%	91%	91%
CPU	Memory	GRU

IBM Cloud Private and IBM Cloud

Containerised middleware and applications are key to moving to modern development and operations approaches.

An integrated, container-native operations and DevOps platform is a requirement.

Expose and integrate

Some existing applications are best exposed as APIs. They then become reusable assets that are easily leveraged for building new capabilities that augment the existing application. Integrate other applications into the ecosystem by leveraging those APIs.

UNLOCK BUSINESS VALUE FROM EXISTING SYSTEMS

Expose. Expose existing value as REST (Representational State Transfer) APIs for easy access from any endpoint.

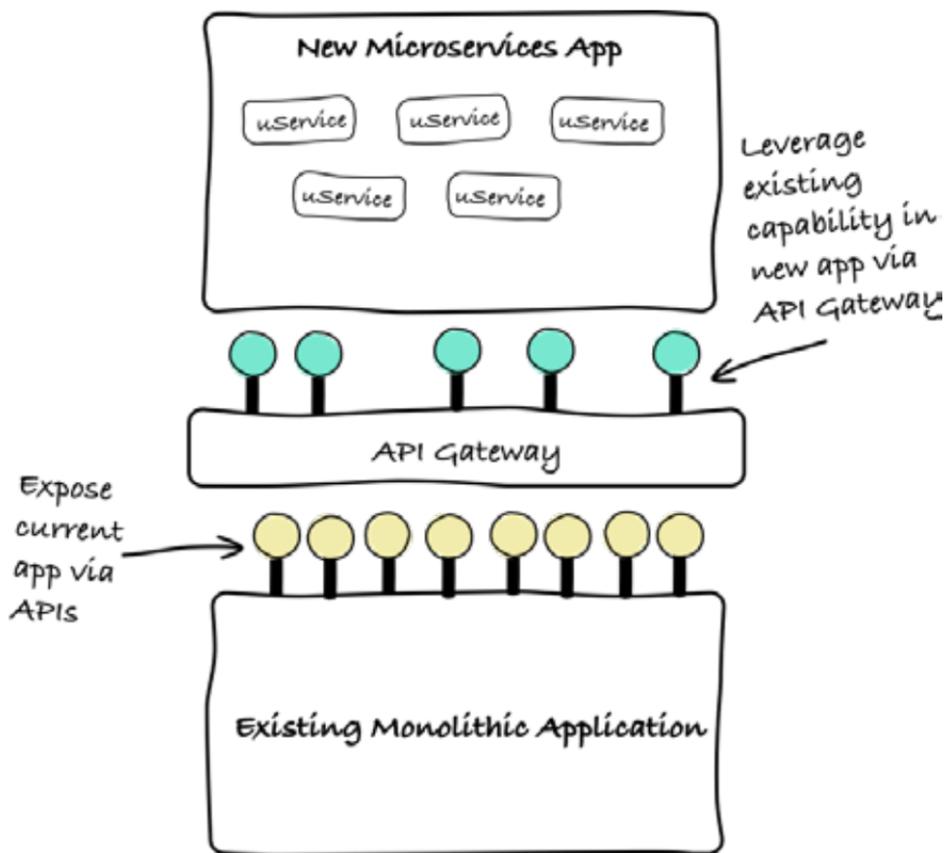
Manage. Place APIs under management control to improve security, performance and visibility.

Leverage. New applications can leverage API's from existing applications without requiring changes to existing applications.



Check out the API architecture.

<https://www.ibm.com/cloud/garage/architectures/apiArchitecture>



Create new capabilities by leveraging APIs.

APIs allow incremental creation of value to extend current application ecosystems.

Refactor

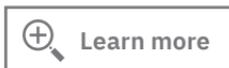
Refactoring is the process of replacing existing, hard to maintain code with new, better code in a piecewise way. You ‘strangle’ the old monolith by replacing each business function incrementally.

MODERNISE INTELLIGENTLY

Productivity. Refactoring an application to microservices improves developer productivity. It allows you to quickly release more code.

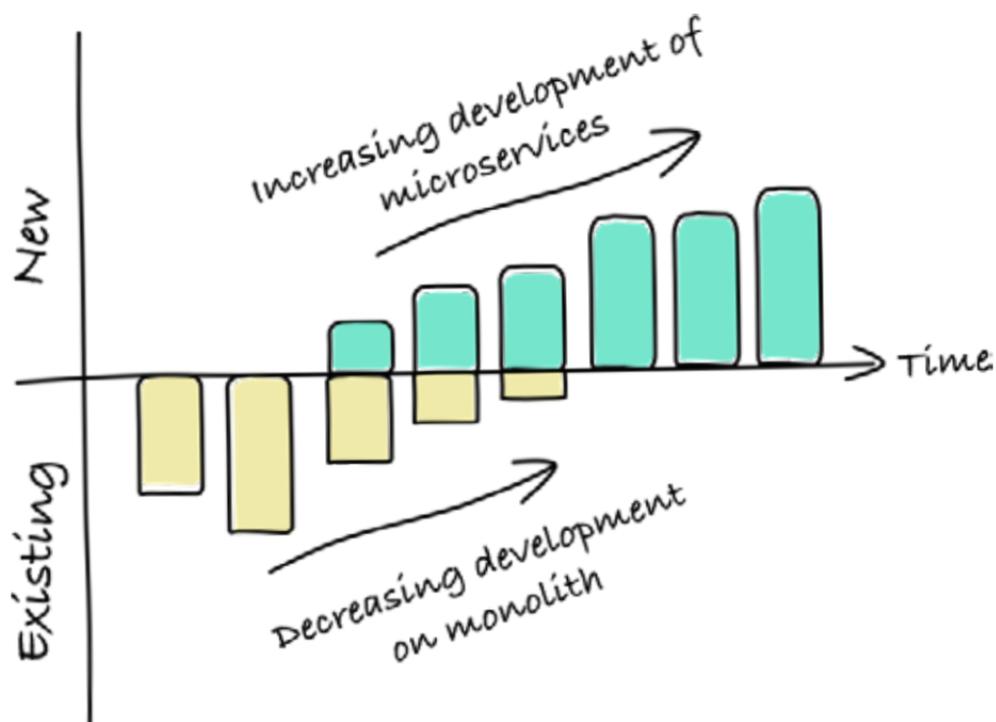
Scalability. Refactoring to a more scalable architecture should be done incrementally. It’s important to provide real business value at each step in a refactoring while improving operational efficiency.

Containerise. You can begin with repackaging your monolith as a container with Liberty, then add new containers to your solution as you separate business functions into new microservices.



Check out the microservices architecture.

<https://www.ibm.com/cloud/garage/architectures/microservices>



Incremental Value is delivered at every point in the process.

When you replace a monolith piecewise, you gain additional efficiency and improvements at each step.

Place selected apps on VMs

Not every application is easily landed on containers. In some cases, parts of an overall solution might need to be executed on VMs. This is a valid and complementary choice as part of the overall modernisation journey.

ROUNDING OUT A MODERNISATION SOLUTION

Fit for purpose. Some existing application infrastructure is optimised for working within VMs. These apps should remain within a VM.

Standardised services. VMs can leverage IBM Cloud Private services to reduce overall management cost.

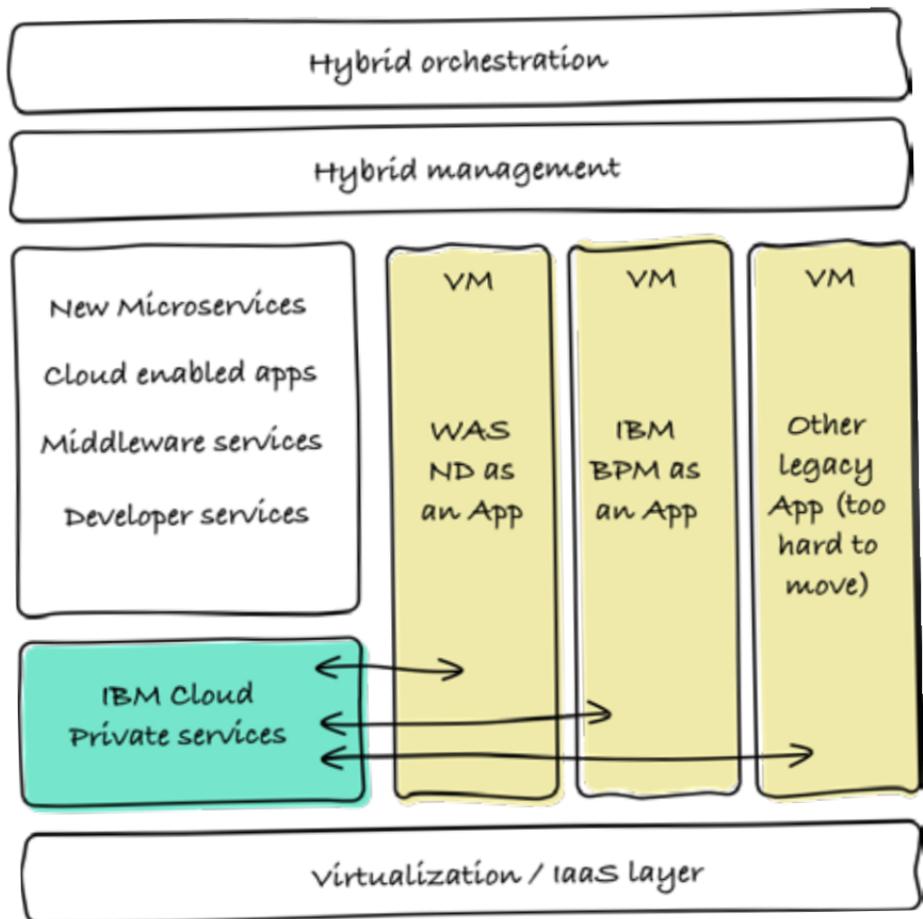
Container integration. Clear obstacles inhibiting modernisation by enabling new container based services to interact with existing apps on VMs.



Check out the infrastructure architectures.

<https://www.ibm.com/cloud/garage/architectures/infrastructure>

Manage VMs and containers together.



VM based assets are part of an overall modernisation solution.

Cloud Adoption and Transformation Consultancy

The Cloud Adoption and Transformation Consultancy helps you balance your current and future technology needs with an understanding of the integrated set of decisions that need to be made. Work with us to align the talent and capabilities you'll need, the management systems you'll use and the business goals on which you will be measured with your organisation's adoption and transformation vision.

A STRATEGIC ROADMAP

Think. Assess your current state and ideate on and prioritise future state goals.

Transform. Get guidance to help you adopt cloud, build confidence and realise your initial set of business outcomes.

Thrive. Work together to adjust and expand your plan to build on your success and amplify your new agile culture.

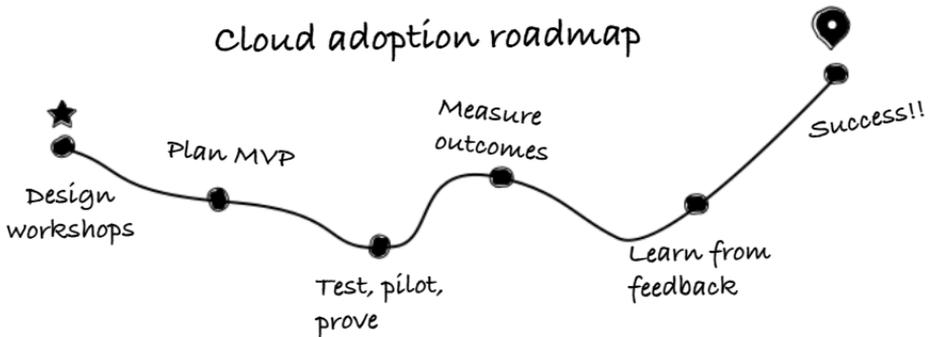


Check out the IBM Cloud Garage Method website (Adoption).

<https://www.ibm.com/cloud/garage/adoption>

Engage IBM's Cloud adoption experts!

cloud adoption roadmap



<https://www.ibm.com/cloud/garage/adoption>

Establish a cloud strategy to adopt, transform and deliver value and then turn it into a roadmap you can follow.

Notes:

Visit an IBM Cloud Garage
ibm.com/cloud/garage/get-started



Take the course: Explore the
Garage Method and get a
badge!!!

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Explore the Private Cloud
Architecture and take the
10-minute guided demo!!

[https://www.ibm.com/cloud/
garage/demo/try-private-cloud-
install-an-app](https://www.ibm.com/cloud/garage/demo/try-private-cloud-install-an-app)



Use the Transformation
Advisor tool to get started!!!

[https://developer.ibm.com/app-
modernisation](https://developer.ibm.com/app-modernisation)

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