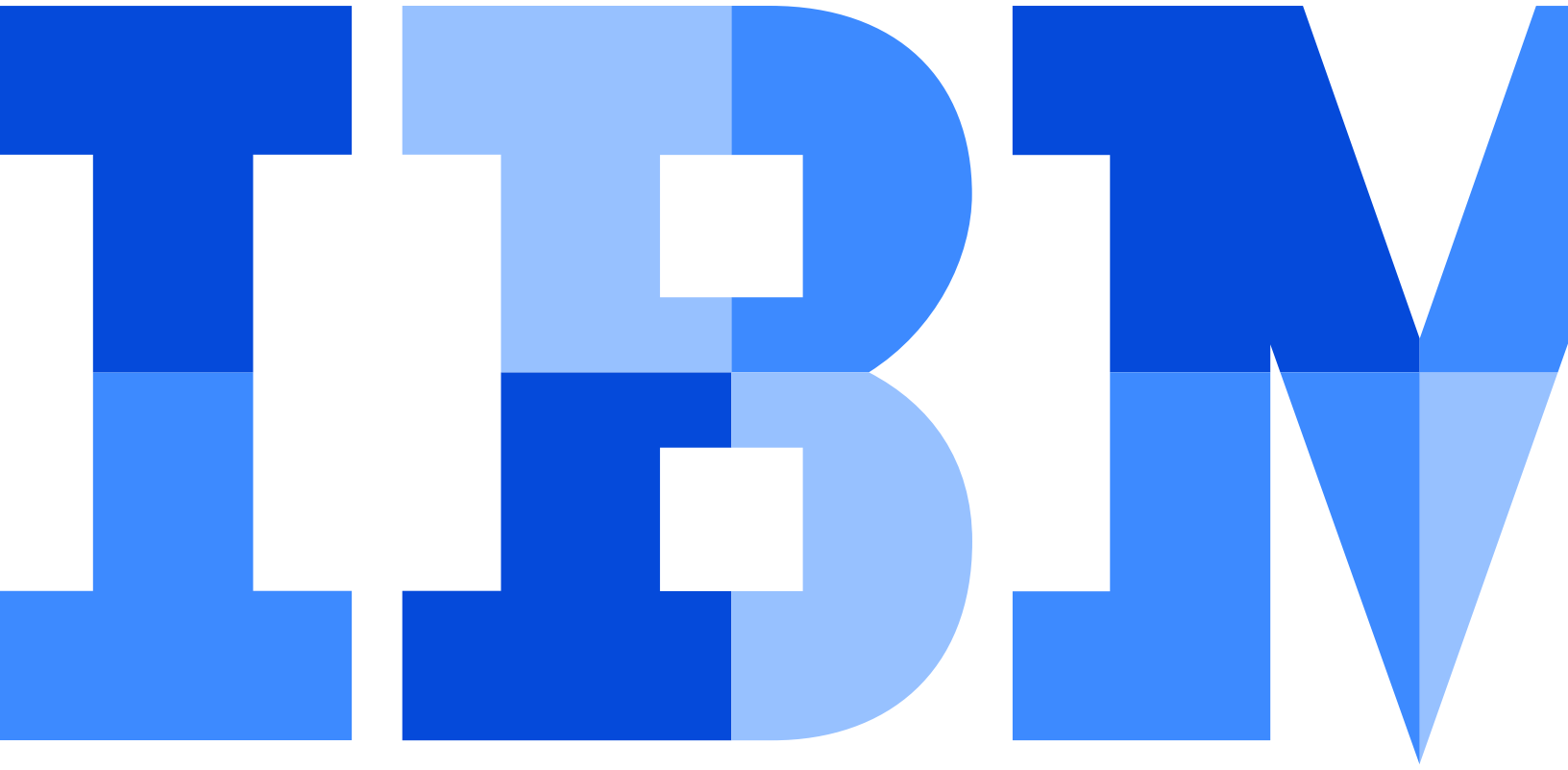
Hybrid Cloud
Thought Leadership White Paper

IBM and Red Hat: Helping enterprises unlock cloud success and transform IT

IBM Cloud Private on Red Hat OpenShift empowers developers and enterprises to meet business demands



IBM

Application modernization, platform choice and the power of cloud

Business pressures demand faster time to market. Enterprises are adopting modern solutions to accelerate agility and reduce operational costs. Developers and IT operations teams are rallying around microservices, containers, Kubernetes and DevOps principles to deliver innovation at speed and scale. Successful companies are adopting these technologies for new cloud-native applications, as well as modernizing their existing applications to work together to deliver business agility. In addition, it's key to delivering these innovations on existing and new infrastructures, including on-premises bare metal, virtualization, private and public cloud, to take advantage of hybrid cloud capabilities.

Application modernization yields immediate benefits around transformation, productivity, operational efficiency and standardization. Application modernization is driven by the need to transform businesses to build new capabilities and deliver them quickly.

IBM Cloud Private, Red Hat OpenShift and containerization—the emergence of Kubernetes

There has been a shift in the industry from a focus on infrastructure as a service (IaaS) to a focus on containerization. This shift is happening in direct response to a need for enhanced developer productivity and to enable DevOps. Clients are moving from virtual and traditional on-premises environments to containerized environments on private and public clouds. Containerization with hybrid cloud strategies enables both infrastructure density on virtual environments and consistent application development models from across all footprints—from development through production. Container orchestration has emerged as the core layer needed to establish automation, coordination and management of containers. Kubernetes has emerged as the de facto standard for container orchestration and has achieved broad adoption in public and private clouds.

Many enterprises have adopted containers and Kubernetes from IBM and Red Hat. IBM recognizes that many of these clients have built enterprise applications on IBM middleware and are seeking to modernize to containers and Kubernetes. Up until now, clients had to choose either IBM® Cloud Private or Red Hat OpenShift as their de factor container application platform. Today, clients have the flexibility to use these two leading container platforms together.

IBM and Red Hat have partnered to bring IBM Cloud Private and its portfolio of application services, including IBM WebSphere®, IBM MQ, and IBM Db2® platforms, to the Red Hat OpenShift Container Platform.

Choose from a catalog of containerized capabilities

IBM Cloud Private provides a catalog of containerized software, middleware, data, management and acceleration tools, which can be deployed and managed on the Red Hat OpenShift Container Platform. The IBM capabilities include:

- **IBM WebSphere:** IBM Enterprise Java Platform has been running the core business of enterprises for years. IBM brings containerized WebSphere to OpenShift.
- **IBM MQ:** IBM MQ is its core messaging platform that has been running enterprise transactions for decades. IBM brings MQ to the mainframe, enabling you to modernize your messaging-based applications.
- **IBM Db2:** IBM Db2 is an enterprise-scale database housing many organizations' mission-critical data. Bringing Db2 data to containers allows you to leverage your data in modern applications.
- **Core operational services:** Simplify operations and easily integrate into your enterprise management systems with core operational services, including logging, monitoring, metering, auditing and security services.
- **Acceleration tools:** Assess and automate your existing applications for containerization with acceleration tools, such as IBM Transformation Advisor. IBM Transformation Advisor provides the capability to quickly evaluate your on-premises applications for the fastest path to deployment on cloud platforms, such as IBM Cloud Private, IBM Cloud Private with Red Hat OpenShift and Red Hat OpenShift on IBM Cloud.

IBM Cloud Private and Red Hat OpenShift are both Kubernetes-based container platforms that enable developer agility and operational simplification for middleware, data and analytics services. Both platforms provide these benefits:

- Multitenant containers and orchestration that's based on Kubernetes for creating microservices-based applications
- Cluster management, security capabilities, image repositories, routing services and a microservices mesh
- A common catalog of enterprise and open services to accelerate developer productivity
- Common base services to support the scalable management of microservices, including Istio, monitoring with Prometheus, logging with Elasticsearch, Logstash and Kibana (ELK) Stack, and more
- Automatic horizontal and nondisruptive vertical scaling of applications
- Network and cloud storage policy-based controls for application isolation and security
- Automated application health checking and recovery from failures
- Support over IaaS infrastructure, including Red Hat OpenStack Platform and VMware ESX.
- Open Service Broker access to a range of public cloud services, as well as Ansible-based playbooks

Although businesses are creating new microservices-based applications on containerized platforms, there's a large opportunity for containerizing existing applications, as well. Clients can achieve improved DevOps, increased developer productivity, and simplified operations across their new and existing applications.

Simplify continuous development and delivery with an integrated DevOps tool chain

- Provides an integrated DevOps platform for creating a culture of automating every step in the software delivery cycle. This process includes provisioning, configuration, application deployment and operations.
- Leverages an integrated continuous development and delivery pipeline for both new and existing applications with IBM Microclimate.

Reduce operational complexity with a common set of services

- IBM Cloud Private provides a set of enterprise-shared services supporting consistent monitoring, login and security services across existing and new applications.
- A catalog of containerized software, ranging from middleware, data, analytics, DevOps, open source and acceleration tools, is available.

To get started on modernizing your journey, you must understand the approaches that are right for your workloads. IBM can assist you in understanding the path that's right for you.

- **Containerize the monolith.** Reduce costs and simplify operations.
- **Expose on-premises assets with APIs.** Application programming interfaces (APIs) enable legacy assets that are difficult to cloud enable.
- **Refactor into microservices.** Break down monoliths into deployable components.
- **Add new microservices.** Innovate incrementally and establish success early.
- **Strangle the monolith.** Incrementally sunset the monolith.

Wrapping an application in a container image is a good first step toward modernization, but many applications aren't optimized for containers. Load balancing, application state handling and monitoring are different in containerized applications. As a result, you might need to rewrite portions of your applications. Likewise, performance tuning and DevOps processes must be aligned to containers.

- **Adapt your applications.** You need accelerators to adapt your application to a containerized environment.
- **Modernize your DevOps and configuration.** You need tools that automatically generate pipelines for new applications, as well as orchestration tools that automate configuration.
- **Simplify operations.** You need out-of-the-box management and monitoring based on open technologies.

To help clients, IBM Cloud Garage and Red Hat Global Professional Services are partnering to deliver a set of services to help you get started in your journey. Those services include:

- A one-day discovery session to define the initial set of use cases and roadmap
- A two-week IBM Cloud Garage Solution Initiation Workshop for IBM Cloud Private to build out your initial container platform and developer environment; run IBM Transformation Advisor on an initial set of applications; and containerize a set of WebSphere applications on the new platform
- An IBM Cloud Private on OpenShift bootcamp to help enable your teams to adopt the solution
- A two-week Red Hat Smart Start for OpenShift to stand up OpenShift

For more information

To learn more about the benefits of IBM Cloud Private on OpenShift, please contact your IBM representative or IBM Business Partner, or visit ibm.com/cloud/partners/ibm-redhat.

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