Transform your applications

Innovate with containers and Kubernetes
Table of contents

Executive summary ................................................................. 3
Application deployment trends ............................................. 4
Transform to gain business value ......................................... 7
What you need to transform applications .............................. 8
Deploy a platform for transformation .................................... 10
See success in action ............................................................. 13
Get started today ................................................................. 14
Executive summary

Open new business possibilities with application transformation and hybrid cloud platforms.

Across industries, organizations depend on applications to engage customers, partners, and employees and achieve business goals. Most operate a mix of custom-developed and commercially available applications that direct both internal and external business processes. Even so, the way you deploy and manage these applications can greatly impact your organization’s ability to innovate and adapt.

Hybrid cloud application platforms are a key component in successful application transformation journeys. They can provide the consistency and flexibility needed to modernize existing applications, develop new cloud-native applications, and deliver applications at scale across infrastructures—without locking you into a specific public cloud or technology.

With a large certified partner ecosystem and open source development model, Red Hat offers an agile hybrid cloud foundation for application transformation. We also have the expertise to be your trusted partner, provide the training your teams need, and support your journey to modern, cloud-native applications and operations.

Read on to discover current trends in application transformation and how you can modernize using hybrid cloud application platforms and cloud services.

Abhinav Joshi
Senior Manager | Red Hat OpenShift
Product Marketing, Red Hat

Application transformation changes the way you build, deploy, and manage applications to increase speed, efficiency, and agility.

The goal is to rapidly build, deploy, update, and scale applications in a secure way, across hybrid environments, using repeatable processes. Application transformation can open new possibilities for your business. For example, DAB Pumps now delivers applications to market in 60% less time. Bajaj Allianz Life Insurance Company simplified security management and eliminated downtime across its IT environment. And Royal Bank of Canada improved trading execution and insights.
Transform your applications: Innovate with containers and Kubernetes

Applications are at the core of modern business. They connect organizations, partners, and customers to deliver value for everyone. Today, organizations are transforming their existing applications to increase customer satisfaction and engagement, create differentiated services, improve operational efficiency, and compete in fast-changing markets. At the same time, they must also maintain existing infrastructure and business processes. As a result, most organizations approach application transformation as an ongoing journey, rather than a single event. Common initiatives include:

**Modernize existing applications**
Rehost, replatform, or refactor your monolithic and n-tier business applications to run in cloud-native environments and use modern programming frameworks like Quarkus, Node.js, and Spring.

**Build cloud-native applications**
Adopt cloud-native and DevSecOps approaches to create modular, adaptable, microservices-based applications and data services. Deliver these applications and services as standalone offerings or combine them with existing applications to release new capabilities faster. You can also deploy modern architecture and operational practices like serverless, application programming interfaces (APIs), event-driven architecture, and automated pipelines to simplify application development, delivery, and integration. Using these technologies, developers can focus on creating applications that deliver business value – without requiring detailed knowledge of the underlying infrastructure.
Add intelligence to cloud-native applications
Integrate data analytics, artificial intelligence (AI), and machine learning (ML) capabilities into cloud-native applications to deliver more insight and value. Make use of vast amounts of data generated in different ways and stored across multiple locations.

Integrate custom and third-party services
Combine application and data services from in-house developments and independent software vendors (ISVs) in a consistent manner across on-site, public cloud, and edge environments.

Hybrid cloud application platforms based on containers and Kubernetes provide an ideal foundation for application transformation. These platforms can deliver the agility, consistency, efficiency, and scalability needed to build, deploy, run, and manage applications across datacenter, edge, and public cloud infrastructures. Combined with DevSecOps approaches, hybrid cloud application platforms can help you build a modern, reliable, and security-focused environment for both existing and new applications.

Top reasons for choosing containers and Kubernetes
Organizations choose to deploy their applications in containers and Kubernetes environments for several reasons:

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consistency</td>
<td>74%</td>
</tr>
<tr>
<td>Agility</td>
<td>73%</td>
</tr>
<tr>
<td>Portability</td>
<td>55%</td>
</tr>
<tr>
<td>Scalability</td>
<td>54%</td>
</tr>
<tr>
<td>Flexibility</td>
<td>47%</td>
</tr>
</tbody>
</table>

Transform your applications: Innovate with containers and Kubernetes

Organizations deploy many different types of applications and workloads in their container and Kubernetes environments.

Types of applications and workloads deployed in containers and Kubernetes environments

- **8%** ISV applications only
- **36%** Custom-developed applications only
- **57%** Mix of ISV and custom-developed applications
- **1%** Stateless workloads only
- **8%** Mostly stateless workloads
- **13%** Mostly stateful workloads
- **80%** Equal mix of stateless and stateful workloads

**Takeaway:** Organizations run a mix of ISV and custom applications on Kubernetes.

**Takeaway:** Organizations are comfortable deploying stateful applications on Kubernetes.

Types of workloads deployed in containers and Kubernetes environments

- Databases and data cache: 76%
- AI/ML software: 65%
- Web servers: 59%
- Logging and monitoring: 58%
- Data ingestion, cleansing, and analytics: 57%
- Programming languages and frameworks: 48%
- Application servers: 45%
- Message broker service: 25%

Transform to gain business value

Across industries, application transformation can help you deliver real business outcomes faster.

Financial services
• Detect fraud faster.
• Enhance customer services.

Energy
• Optimize field operations.
• Improve worker safety.

Healthcare
• Increase clinic and hospital efficiency.
• Improve diagnostics.

Government
• Improve information management.
• Enhance critical decision support.

Manufacturing
• Better predict equipment failures.
• Perform preventative maintenance.

Telecommunications
• Offer more valuable customer services.
• Optimize network operations.

Automotive
• Create and deploy autonomous driving technologies.
• Simplify and automate component testing.
What you need to transform applications

To effectively and efficiently build, deploy, and manage applications in containers and Kubernetes, you need a unified, integrated hybrid cloud application platform. Look for a platform that includes:

**A consistent infrastructure software foundation**
A secure Linux® container host operating system and Kubernetes orchestration and cluster services – including automated installation, over-the-air updates, monitoring, and logging – provide consistent operations and life-cycle management across infrastructure.

**Cloud-native development and operations services**
Platform, application, data, and developer services – including continuous integration/continuous deployment (CI/CD) pipelines, integrated development environments (IDEs), programming languages, runtimes, and API management – provide capabilities for efficiently and consistently building, deploying, and managing intelligent, cloud-native applications.

**Streamlined security and management capabilities**
Consistent, unified security, management, and container image registry services simplify administration of large, distributed hybrid cloud environments.
An ideal hybrid application cloud platform should incorporate all of the services and capabilities needed to effectively modernize existing applications and develop and deploy new cloud-native applications.

<table>
<thead>
<tr>
<th>Workload management</th>
<th>Cloud-native development</th>
<th>Data-driven insight</th>
<th>Developer productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Platform services</strong></td>
<td><strong>Application services</strong></td>
<td><strong>Data services</strong></td>
<td><strong>Developer services</strong></td>
</tr>
<tr>
<td>• Service mesh and serverless</td>
<td>• Languages and runtimes</td>
<td>• Databases and caches</td>
<td>• Developer interfaces and IDEs</td>
</tr>
<tr>
<td>• Builds and CI/CD pipelines</td>
<td>• API management</td>
<td>• Data ingestion and preparation</td>
<td>• Plugins and extensions</td>
</tr>
<tr>
<td>• GitOps and distributed tracing</td>
<td>• Integration</td>
<td>• Data analytics and AI/ML</td>
<td>• CodeReady workspaces</td>
</tr>
<tr>
<td>• Log management</td>
<td>• Messaging</td>
<td>• Data management and resilience</td>
<td>• CodeReady containers</td>
</tr>
<tr>
<td>• Cost management</td>
<td>• Process automation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Kubernetes cluster services**
- Installation
- Over-the-air updates
- Networking
- Ingress
- Storage
- Monitoring
- Logging
- Registry
- Authorization
- Containers
- Virtual machines
- Operators
- Helm

**Kubernetes orchestration**

**Linux container host operating system**

- Physical
- Virtual
- Private cloud
- Public cloud
- Edge

---

Transform your applications: Innovate with containers and Kubernetes
Deploy a platform for transformation

**Red Hat® OpenShift®** is a unified, security-focused hybrid cloud application platform for innovation. Powered by containers and Kubernetes, it provides a foundation for modernizing existing applications, building cloud-native applications, streamlining development, adding intelligence to applications, and integrating third-party services. Red Hat OpenShift runs consistently across hybrid and multicloud environments, giving your organization the capabilities you need to be successful today and in the future.

Read the [Red Hat OpenShift and Kubernetes... what’s the difference? e-book](#) to discover more.

---

**Complete, integrated platform**

Deploy an integrated infrastructure software foundation, cloud-native application and data services, and security and management controls with a modular platform that is trusted by industry innovators around the world. Gain speed, efficiency, and scalability across a broad selection of technologies and applications.

**Developer tools**

Access a large library of integrated, certified tools, development environments, and self-service capabilities that let developers code at speed and improve efficiency and consistency throughout application life cycles.

**Automation**

Simplify application life-cycle management with support for both Kubernetes Operators and Helm. Deploy and manage your preferred partner applications more easily and confidently with [certified operators](#) and Helm charts that encompass detailed vendor expertise.

**Multiple deployment options**

Deploy and manage Red Hat OpenShift yourself or use a cloud service. Red Hat OpenShift cloud services are available on AWS, Google Cloud, IBM Cloud, and Microsoft Azure, so you can choose the option that best fits your organization’s needs. Each service provides complete, full-stack environments with all necessary services, simple self-service options, and expert 24x7 support via stringent service-level agreements (SLAs).

Read the [Achieve more with Red Hat OpenShift cloud services brief](#) to learn more.
Red Hat brings together everything you need to transform your applications.

**Integrated portfolio**

Build an ideal software foundation for all application transformation use cases using a complete, integrated portfolio of products and cloud services that work together reliably.

**Certified partner ecosystem**

Access a broad ecosystem of Red Hat certified ISV products to customize your environment with the application, data, AI/ML, developer, and IT operations services that work best for your organization. Simplify purchasing via the Red Hat Marketplace.

**Expert consulting services**

Get help modernizing, migrating, and developing applications with expert services, detailed guidance, and practical tools that incorporate culture, process, and technology.

**Migration tools**

Take advantage of Red Hat migration tools and the Konveyor community to help you plan your transformation journey and move your applications to Red Hat OpenShift.
Combined with our integrated portfolio, the Red Hat certified partner ecosystem lets you choose the industry-leading products, technologies, and services that work best for your organization’s needs.
DAB Pumps wanted to update its integration architecture to improve communication between the company’s various enterprise applications as a foundation for business expansion. The company used Red Hat OpenShift and Red Hat Integration to combine and speed data access for critical systems and move from a monolithic environment to a microservices architecture.

Bajaj Allianz Life Insurance Company (BALIC) sought to increase the effectiveness of its digital service channels and create closer relationships with external partners. The company created a reliable microservices environment for digital applications using Red Hat OpenShift, supported by Red Hat 3scale API Management and Red Hat’s single sign-on (SSO) technology.

Royal Bank of Canada (RBC) and its AI research institute Borealis AI wanted to build an AI infrastructure to speed time to market for intelligent applications and deliver an enhanced experience for clients. The company deployed Red Hat OpenShift with NVIDIA’s DGX AI computing systems to create a new private cloud infrastructure.

“With Red Hat’s technology, we were able to create an efficient microservices-based environment to enhance business flow.”

Goutam Datta
Chief Information & Digital Officer, Bajaj Allianz Life Insurance Company

“Improved trading execution”
“Reduced client calls”
“Sped delivery of new applications”

Royal Bank Canada

“Centralized management”
“Sped time to market by 60%”
“Set up real-time data availability”

Read the press release to learn more.
Read the success story to learn more.
Read the press release to learn more.
Get started today

Red Hat helps you modernize more easily. Take advantage of a unified platform, integrated products and services, a large partner ecosystem, and expert services to transform your applications.

- Modernize existing applications.
- Build cloud-native applications.
- Add intelligence to applications.
- Integrate certified ISV services.

Start your application transformation journey with Red Hat:
red.ht/consulting

Take your application transformation journey further

Red Hat Consulting experts can help you, your team, and your organization develop the practices, tools, and culture needed to more efficiently modernize existing applications and to build new ones using technologies like containers, Kubernetes, databases, data analytics, and AI/ML.

Learn more: red.ht/cloudnativedev

Read these e-books and overviews to discover how Red Hat can help you rapidly transform your applications across use cases and industries:

- Java™ application modernization
- Cloud-native databases and data analytics
- Event-driven architecture for hybrid clouds
- Production-ready AI/ML environments
- Application management in Kubernetes environments
- Red Hat OpenShift ISV ecosystem
About Red Hat

Red Hat is the world's leading provider of enterprise open source software solutions, using a community-powered approach to deliver reliable and high-performing Linux, hybrid cloud, container and Kubernetes technologies. Red Hat helps customers develop cloud-native applications, integrate existing and new IT applications, and automate and manage complex environments. A trusted adviser to the Fortune 500, Red Hat provides award-winning support, training and consulting services that bring the benefits of open innovation to any industry. Red Hat is a connective hub in a global network of enterprises, partners and communities, helping organizations grow, transform and prepare for the digital future.

Copyright © 2021 Red Hat, Inc. Red Hat, the Red Hat logo, and OpenShift are trademarks or registered trademarks of Red Hat, Inc., in the U.S. and other countries. Linux® is the registered trademark of Linus Torvalds in the U.S. and other countries. Java and all Java based trademarks and logos are trademarks or registered trademarks of Oracle America, Inc. in the U.S. and other countries. All other trademarks are the property of their respective owners.