Boost business agility
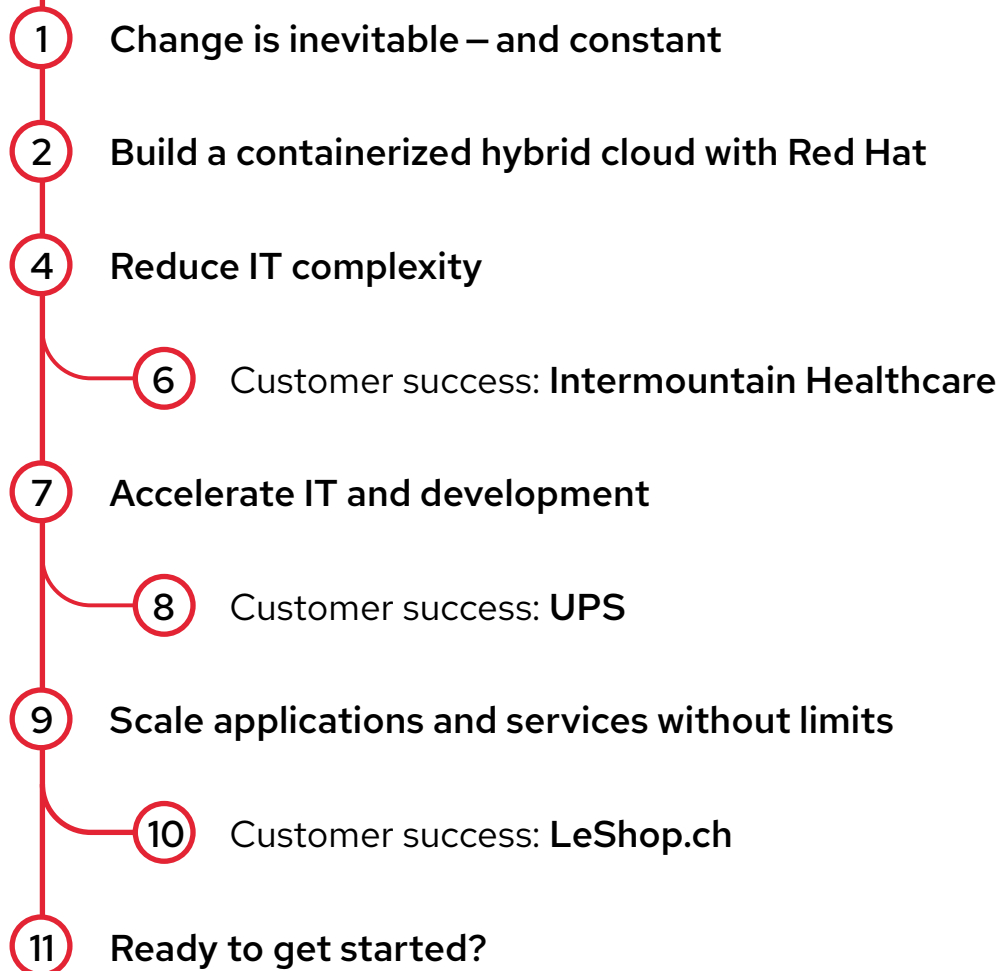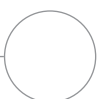
A guide to modernizing IT with hybrid cloud and containers

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Change is inevitable — and constant

IT and business are changing rapidly. Growth opportunities in new markets, evolving customer behaviors and preferences, increased competitive pressure, and new standards in regulatory compliance are causing organizations to adapt their operations and processes.[1]

Even so, rigid legacy IT infrastructure can keep you from adjusting to change and reduce the business value of IT. These complex environments often limit flexibility, speed, and scalability, resulting in slow application and service delivery. As a result, your organization can experience broad effects, especially within your IT operations and development teams. Developers need resources to be provisioned and scaled quickly so they can begin work immediately when an idea strikes. They also want more control over those resources while they are in use. However, with complex, hard-to-manage environments and manual processes, IT operations teams often struggle to provide resources and services at the speed that developers demand. They need to maintain infrastructure control, security, and reliability but do not want to become a bottleneck. This tension causes a misalignment between the two teams and further impedes efficiency, collaboration, and progress.

To overcome these challenges, you need a streamlined, agile, scalable, and fast IT environment.

Key concepts

Together, hybrid cloud, multicloud, container, and Kubernetes technologies provide the agility and portability required for IT to deliver services faster to developers and lines of business.

Hybrid cloud

Hybrid cloud combines public and private cloud resources into a connected environment with workload portability, orchestration, and management.
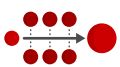
Multicloud

Multicloud is a cloud approach that uses multiple cloud services from multiple private or public cloud providers, without interconnectivity between clouds.
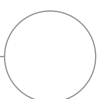
Containers

Linux containers are technologies that allow you to package and isolate applications with their entire runtime environment—all of the files necessary to run.

Kubernetes

Kubernetes is an open source platform that automates container operations and reduces manual processes for deploying and scaling containerized applications.

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1 Brian Solis, Altimeter, "The state of digital transformation, 2018-2019 edition," 2018.
insights.prophet.com/the-state-of-digital-transformation-2018-2019.

Build a containerized hybrid cloud with Red Hat

Based on innovative, enterprise-grade open source technologies, Red Hat provides a unified hybrid solution for running workloads consistently across on-site and cloud infrastructure.

Red Hat® OpenShift® is a leading enterprise Kubernetes platform, with full-stack automated operations to manage hybrid cloud and multicloud deployments, optimized for developer productivity and innovation. It provides:

- Trusted enterprise Kubernetes.

- Cloud-like simplicity, everywhere.

- Tools for developer productivity.

Red Hat Enterprise Linux® delivers a stable, secure, consistent foundation across hybrid cloud deployments with the tools needed to deliver workloads faster with less effort. It provides:

- Advanced security and management controls.

- Exceptional stability, reliability, and performance.

- A consistent foundation for IT innovation.

Red Hat Enterprise Linux CoreOS is a lightweight operating system—based on Red Hat Enterprise Linux—for clustered container deployments that delivers massive scalability with minimal overhead. It provides:

- Automated operations for Red Hat OpenShift.

- An operator framework to extend Kubernetes capabilities.

- An immutable, container-optimized Linux host.

Red Hat OpenShift Container Storage is open, software-defined storage that is integrated with Red Hat OpenShift, allowing data to move freely throughout your environment. It provides:

- Unified, persistent storage across environments.

- A seamless developer experience.

- A common management interface with Red Hat OpenShift.
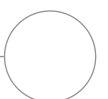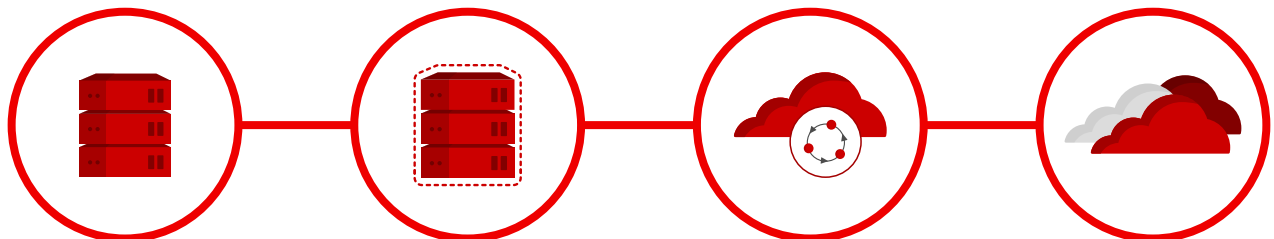
Red Hat's hybrid cloud solution provides an efficient, always-on, scalable, and dynamic infrastructure to meet your business needs while adhering to organizational, regulatory, and financial constraints.
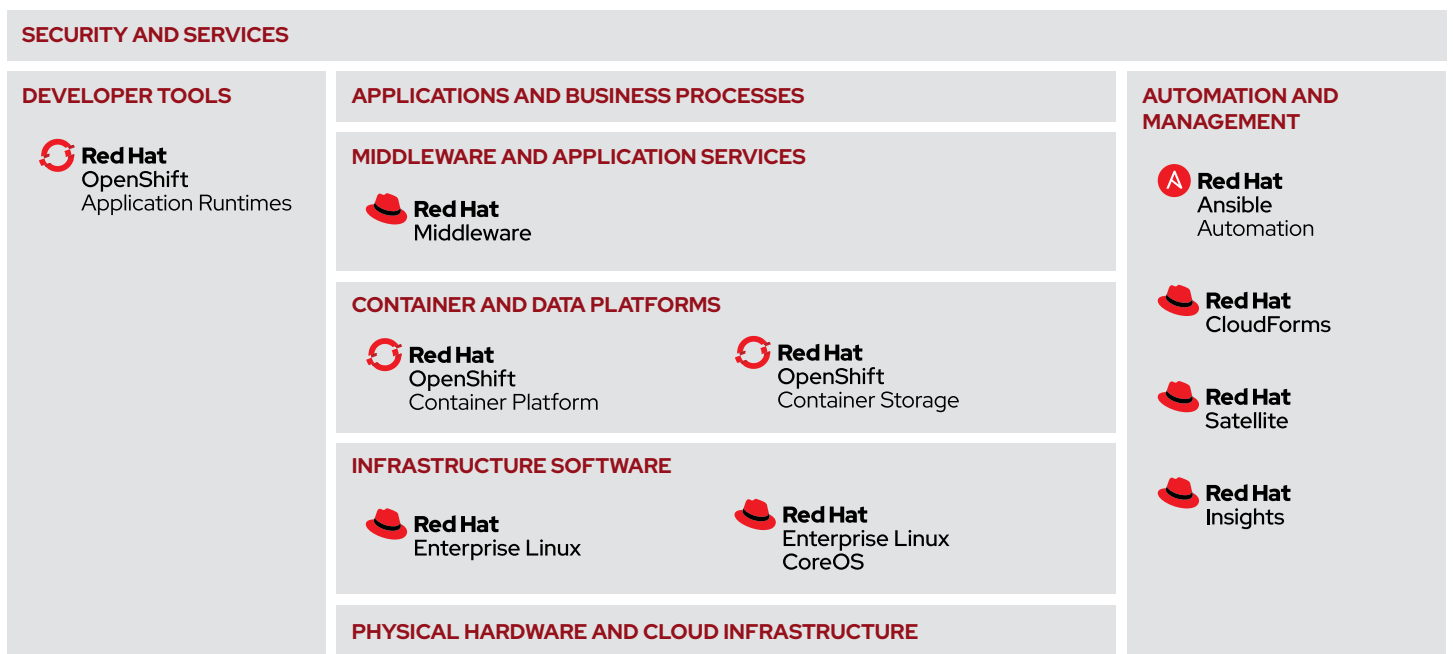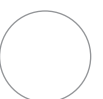

SECURITY AND SERVICES

DEVELOPER TOOLS

Red Hat
OpenShift
Application Runtimes

APPLICATIONS AND BUSINESS PROCESSES

MIDDLEWARE AND APPLICATION SERVICES

Red Hat
Middleware

CONTAINER AND DATA PLATFORMS

Red Hat
OpenShift
Container Platform

Red Hat
OpenShift
Container Storage

INFRASTRUCTURE SOFTWARE

Red Hat
Enterprise Linux

Red Hat
Enterprise Linux
CoreOS

PHYSICAL HARDWARE AND CLOUD INFRASTRUCTURE

AUTOMATION AND MANAGEMENT

Red Hat
Ansible
Automation

Red Hat
CloudForms

Red Hat
Satellite

Red Hat
Insights

Figure 1. Red Hat's containerized hybrid cloud foundation

Reduce IT complexity

IT complexity is increasing, resulting in inconsistencies, increased security risks, and management difficulties. Containers can help you simplify your IT environment and operations. By isolating workloads from each other and abstracting them from the underlying infrastructure, containers provide increased consistency and security. This abstraction also simplifies management and deployment across different environments.

Simplify your IT with Red Hat

Red Hat's hybrid cloud and container foundation simplifies IT operations to increase consistency, enhance security, and streamline management.

Simplicity

Red Hat OpenShift gives you cloud-like simplicity with full-stack automated operations on a consistent foundation across on-site, cloud, and hybrid infrastructures. With Red Hat Enterprise Linux CoreOS, OpenShift offers automated installation, upgrades, and life-cycle management for every part of your container stack — the operating system, Kubernetes and cluster services, and applications — across your business. The included Operator Lifecycle Manager further simplifies management of Kubernetes-native applications with built-in operational knowledge. It also extends the Kubernetes application programming interface (API) to complex, stateful applications, allowing you to deploy, manage, and maintain them within Red Hat OpenShift.

Consistency

Red Hat OpenShift lets you deploy containers and Kubernetes consistently across on-site, private cloud, and public cloud infrastructures. It includes the pieces needed to run containers in production: an enterprise-grade Linux operating system, container runtime, networking, monitoring, registry, and authentication and authorization solutions. These components are tested together for unified operations on a complete platform spanning every cloud. Red Hat Enterprise Linux CoreOS also provides an immutable, container-optimized Linux host that can be deployed on any infrastructure. Finally, Red Hat OpenShift integrates with your existing investments to provide a consistent operations, development, and management experience across multiple infrastructures and teams.
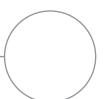
KEY BENEFITS FOR YOUR ORGANIZATION

Operations

Consistency and automation allows operations to manage infrastructure and services more easily.

Developers

A simpler, consistent environment makes it easier to develop applications that run across infrastructures, more securely.

Security

Red Hat OpenShift is designed for full-stack, continuous security from the operating system to the application and throughout the software life cycle. In addition to the security provided by Red Hat Enterprise Linux and containers themselves, Red Hat OpenShift adds built-in authentication and authorization, secrets management, auditing, logging, and an integrated container registry for granular control over resources and user permissions. Red Hat Enterprise Linux CoreOS provides added automation to more easily keep large deployments up-to-date and quickly identify security vulnerabilities within your container images.

Did you know?

Cloud is the top priority for technology investments in 2019 for 37% of surveyed organizations.[1]

RUN FASTER AND FREE UP RESOURCES

With Red Hat OpenShift, you can modernize and automate what you have so you can run faster and free up resources. In fact, organizations using Red Hat OpenShift require **35% less IT staff time** per application developed.[2]
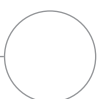
SIMPLICITY   +   **CONSISTENCY**   +   **SECURITY**

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2 IDC Whitepaper, sponsored by Red Hat, "The Business Value of Red Hat OpenShift," October 2017. redhat.com/en/resources/The-Business-Value-of-Red-Hat-OpenShift.

Intermountain Healthcare

Simplify and speed IT infrastructure and operations

Challenge

Intermountain Healthcare is a not-for-profit health system that offers a broad range of healthcare services and supports innovative patient care. However, in the group's proprietary IT environment, making changes was a complex process, and provisioning delays hindered development work. In addition, using proprietary hardware and software added licensing and other IT costs. As a result, the group sought a more agile, flexible solution that would help simplify their IT environment and improve costs.

Solution

To provide more cost-effective, innovative capabilities to doctors and staff, Intermountain Healthcare chose to upgrade their aging IT environment with agile, easy-to-use technology from Red Hat. The Red Hat solution helped the group streamline its patient portal, simplify its messaging interfaces, and auto-mate configuration and management tasks. Through self-service provisioning, new workload deployment time has decreased from 2-3 weeks to about 4 hours, and virtual machine provisioning time has improved from 3 days to just 20 minutes.
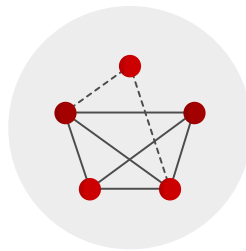
> *OpenShift, Ansible Automation, and CloudForms give more control to our developers, which helps them work more efficiently to create better patient health solutions.*
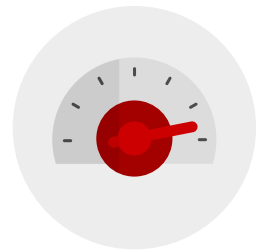>
> **GABRIEL FLOYD**
> ENTERPRISE MIDDLEWARE MANAGER,
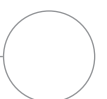> INTERMOUNTAIN HEALTHCARE
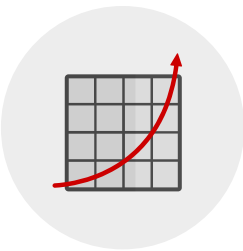
Improved efficiency of IT operations

Increased cross-team collaboration

Accelerated deployment and provisioning

Accelerate IT and development

Slow service delivery and application development can impede business success. Developers have to wait for resources, delaying application development processes and product launches. Users may go around IT to deploy unauthorized resources to get their jobs done, reducing IT's control and overall security. Operations teams have trouble meeting demand from users and become a bottleneck to be avoided, rather than a collaborative part of the team.

Containers help to speed IT operations and development cycles. Containerized applications can be deployed across different infrastructures without changes. Containerized microservices can be reused in other projects. Containers also support continuous integration/continuous delivery (CI/CD) and DevOps methodologies that unify operations and development and speed processes.

Accelerate your IT with Red Hat

Red Hat's hybrid cloud foundation gives you the tools and technologies you need to speed operations and development and adopt DevOps processes.

Productivity and collaboration

Red Hat OpenShift increases developer productivity and collaboration with operations teams. It gives developers their choice of supported languages, frameworks, databases, and development environments — including a desktop integrated development environment (IDE), a Kubernetes-native browser IDE, a command-line interface (CLI), and a built-in web console. The Red Hat OpenShift Service Catalog lets developers integrate application services from public cloud providers. They can also incorporate validated independent software vendor (ISV) solutions through the Red Hat OpenShift Primed and Red Hat Certified Containers programs. Finally, built-in workflows and tools and integration with existing investments eases migration to new processes.

Fast development

Red Hat OpenShift can help you adopt agile development processes. Kubernetes-native workflows, embedded CI/CD, container catalogs and image streams, and self-service developer access to resources speed your entire development and deployment process. Integration with your existing pipeline lets developers get started using their current processes. Automated builds with source-to-image (S2I) turn application logic into images, along with included container registry and image streams for distribution and version tracking. Red Hat OpenShift Service Mesh and support for Knative[3] allow developers to focus on writing code — without worrying about service-to-service communication, security, and underlying server management tasks like orchestrating source-to-container workflows, traffic management, and scaling.

KEY BENEFITS FOR YOUR ORGANIZATION

Operations

Self-service capabilities allow operations to focus on higher-value projects. Collaboration tools bring operations teams into the development process.

Developers

Self-service capabilities allow developers to get the resources they need, faster. Developers can use their preferred tools, frameworks, and languages.

RESPOND QUICKLY AND EASILY TO CHANGE

Red Hat OpenShift helps to unify your operations and development teams to speed processes, so you can respond faster and more easily to change. Organizations using Red Hat OpenShift experience 66% faster application development life cycles.[2]

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3 Knative support as a foundation for serverless functions is available through developer preview only.
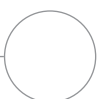
UPS

Streamline application delivery with containers and DevOps

Challenge

UPS is a global leader in logistics, delivering more than 20 million packages per day. The company wanted to optimize package operations and delivery using a new application platform, called the Center Inside Planning and Execution System (CIPE). In addition, the company wanted to adopt a more agile, collaborative DevOps approach—and technology that would support both CIPE's new capabilities and this new work method.

Solution

With help from Red Hat, UPS created a flexible, agile, container-based cloud computing environment. In addition, the company shifted to a more collaborative, iterative DevOps approach.

With its new infrastructure, UPS has improved developer productivity for faster application and feature creation—and business value. The company can also scale automatically as needed during peak demand times—like the holiday season. As a result, UPS can provide consistent, reliable package tracking and delivery services to customers—no matter the time of year.
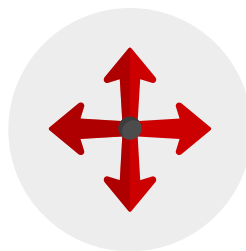
> *With OpenShift, we're incrementally delivering services using microservices and containers. As opposed to providing a solution in 18 months, we can start giving value back to the business within weeks or months.*
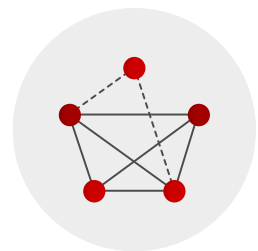>
> **CARLA MAIER**
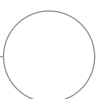> SENIOR MANAGER OF CLOUD PLATFORMS AND TECHNOLOGY, UPS
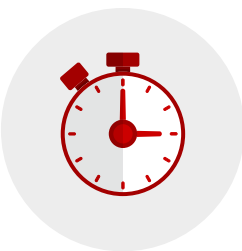
Cut development cycle time

Gained high scalability and availability

Improved collaboration between teams and partners

Scale applications and services without limits

Demand for applications and services can change rapidly. Inability to scale dynamically can impede business success and lead to poor application performance and increased downtime. Container and hybrid cloud technologies allow you to quickly and independently scale applications, services, and resources across on-site and private, hybrid, and public cloud environments, ensuring performance and reliability at all times.

Improve scalability with Red Hat

Red Hat OpenShift provides a scalable foundation that lets you rapidly respond to changes in demand.

Centralized management

With Kubernetes, Red Hat OpenShift provides advanced management and automation to scale applications quickly and efficiently. Kubernetes allows you to manage containers at massive scale and delivers innovative container life-cycle administration capabilities. The Red Hat OpenShift web console gives you a complete view of your clusters, as well as cloud-agnostic monitoring and administrative controls.

Flexible consumption models

Red Hat provides self-hosted and managed consumption models for Red Hat OpenShift, including OpenShift Container Platform, OpenShift Container Engine, OpenShift Dedicated, Red Hat OpenShift on IBM Cloud, and Microsoft Azure Red Hat OpenShift. You can deploy any combination of these offerings to suit your organization's needs and manage all your Kubernetes clusters using a consistent platform.

Choice of partners

Red Hat has technical alliances with leading cloud providers, including Amazon Web Services (AWS), Google Cloud, IBM, and Microsoft Azure, along with hundreds of cloud provider partners worldwide. These partnerships let you deploy the right cloud for your application, budget, geography, and compliance requirements.

KEY BENEFITS FOR YOUR ORGANIZATION

Operations

Fast, simple scaling makes it easier to ensure that applications will be available and perform well.

Developers

Applications get more visibility and perform as intended, showcasing developers' skills and work.

IMPROVE USER EXPERIENCES AND REDUCE COSTS

With Red Hat OpenShift, you can scale dynamically and automatically to respond to changes in demand so your customers always have access to high-performance experiences, while you save on resource costs when demand is low. Organizations using Red Hat OpenShift experience 38% lower IT infrastructure and development platform costs per application.[2]
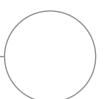
Customer success highlight

LeShop.ch

Support a culture of innovation with an agile, scalable solution

Challenge

LeShop.ch, Switzerland's leading online supermarket and one of Europe's largest online retailers, attributes its success to its focus on customer experience and a culture of innovation. However, the company's legacy IT environment was too complex and inflexible, delaying innovation.

Solution

To gain the agility and flexibility needed for its business, LeShop.ch's IT department chose a cloud-based application platform and a DevOps approach. The solution provides the company with a scalable, flexible deployment and runtime environment. Its deployment and integration capabilities let LeShop.ch build applications and run them in a hybrid cloud architecture that spans the company's datacenter and public cloud.

LeShop.ch's new platform helps its IT team meet growing demand for new application services, allowing developers to focus on innovation instead of routine maintenance. The company can now use its new environment and innovative DevOps processes to bring new services to market faster and easily scale its application requirements to meet customer demand.
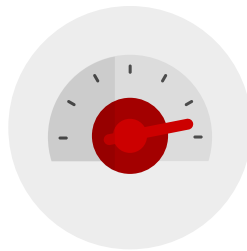
> *We can deploy new applications quickly, but the real beauty is the flexibility: some existing applications grow, others shrink. We can make those changes automatically with one click, in a minute instead of a day.*
>
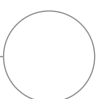> **IVAN TORREBLANCA**
> CIO, LESHOP.CH
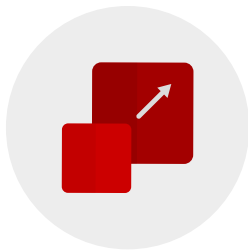
Improved scalability of new and existing applications

Reduced time to deploy new services from weeks to days

Increased collaborative innovation

Ready to get started?

Red Hat offers a variety of training and consulting services to help you and your team get started faster.

- **Guided adoption services** assess your current environment, operations, and culture, and help you implement new technologies to meet your business goals.

- **Specialized training** provides hands-on experiences and practical certification to help your teams build the skills they need for the future.

- **Red Hat Open Innovation Labs** delivers immersive residencies for modernizing application development based on extensive open source experience, innovative tools, and proven best practices.

Plan your journey to containers and hybrid cloud: redhat.com/consulting.

Red Hat