

# Accelerate Application Development and Delivery

With Cisco UCS and Red Hat OpenShift Container Platform



Simple to deploy and manage



Easy to automate and orchestrate



Ready to perform and scale

**We make it easy to bring together developers and IT operations teams so that you can develop, deploy, and manage your applications better and faster.**

Your IT organization needs to deliver cloud-native applications faster. Being successful requires accelerated delivery of application platforms that support the development of cloud-native and containerized traditional enterprise applications with shorter application lifecycles. That's why many organizations use Cisco Unified Computing System™ (Cisco UCS®) running Red Hat OpenShift Container Platform. Using the automation technologies and cloud architecture of this programmable and flexible solution, you can standardize and streamline your developer workflows and get applications delivered in less time and at less cost.

## Changing IT models

Accelerating application development and deployment cycles requires agile infrastructure. That's a tricky proposition when your IT groups must support both legacy and modern application environments with the same set of infrastructure resources. To help this effort, many companies are turning to digital transformation techniques to change IT models and operations. Development-centric application platforms and DevOps initiatives are key components of that strategy. Today, containers and microservices architectures play an important role in this transformation.

Cisco UCS with  
Intel® Xeon®  
Scalable processors



Enterprises that adopt containers report a 15 to 30% reduction in development time as well as 5% to 15% cost savings due to higher density deployments and better resource utilization.

[For Traditional Enterprises, the Path to Digital and the Role of Containers](#)  
Bain & Company, 2016

The move from legacy application infrastructure to platform-as-a-service (PaaS) cloud infrastructure, and the adoption of containers and microservices architectures, allows your developers to quickly create applications using familiar tools, while your operations teams retain control over IT resources. This shift is simplified when the platform runs on programmable IT infrastructure with open APIs that can support application requirements.

## The solution

Developers often need lots of different environments quickly. They can't wait days or weeks for requests for IT resources to be fulfilled. The combination of Cisco UCS and Red Hat OpenShift Container Platform simplifies and accelerates the delivery of IT resources to developers and operations teams.

## Cisco UCS

Cisco UCS provides programmable infrastructure and built-in automation capabilities that make deploying the right infrastructure quick and easy. It combines blade and rack servers, networking, storage, and intent-based management that automates and accelerates the deployment of all your applications.

## Red Hat OpenShift Container Platform

Sharing IT infrastructure requires strong isolation capabilities so that one environment does not impact another. Done correctly, isolation mechanisms can also help establish predictable environments that deliver consistency across build, test, and production environments. Built on proven open source technologies, Red Hat OpenShift Container Platform integrates architecture, processes, platforms, and services, and provides a powerful cluster management and orchestration system for multitenant environments (Figure 1).



**Figure 1** Containers encompass everything an application and developer needs at each stage of the application lifecycle.



**Figure 2** Containers allow infrastructure resources to be safely shared, repurposed, and reproduced throughout the application lifecycle.

## How it helps

By deploying Red Hat OpenShift Container Platform on Cisco UCS, your organization can support continuous application delivery, workflow automation, and an easy path to a DevOps model.

### Deployment automation

Within Cisco UCS, the entire state of each server—identity, configuration, and connectivity—is abstracted into software. This makes our system 100 percent programmable, and easy to adapt to the varying requirements of both modern workloads and traditional monolithic business applications. Your IT administrators can select among policies to create a Cisco UCS service profile. This complete specification details the way that a system should be identified, configured, and connected to IP and storage networks.

Automation extends beyond the system. Your IT staff can use the scriptable vMedia feature in Cisco UCS management tools to map and use external media within a Cisco UCS domain and perform operating system provisioning. Furthermore, our approach includes easy-to-use programming environments that abstract the underlying unified API. Your administrators and developers can use the tools with which they are familiar, including Microsoft PowerShell, Python, Ansible, Puppet, and Chef, to automate deployment.

### Predictable environments

You need assurance that the applications that are tested and proven in your development environment will run the same way on your production systems. Our solution helps ensure that your build, test, and production environments are the same. With fine-grained control of the

application software stack, your production teams can deploy the exact configuration used by your development and test teams. In addition, the use of Cisco UCS service profiles allows you to create a hardware configuration once and replicate it across environments for improved consistency and policy adherence. And the capability to attach persistent storage to containers means that your IT teams can run both stateful and stateless applications on one platform.

### Simplified management

Management orchestration tools simplify the consumption, management, and lifecycle of your IT infrastructure resources. Cisco UCS plug-ins are uniquely positioned to provide a premier framework for automation, giving you the flexibility to choose your management tool and define entire workflows from a single pane. These workflows let you automate

## For more information

- Read the Cisco Validated Design, [Cisco UCS Infrastructure for Red Hat OpenShift Container Platform Design Guide](#).
- Learn about [Cisco UCS](#).
- Learn about [Red Hat OpenShift Container Platform](#).

the delivery and management of physical and virtual infrastructure, perform lifecycle tasks, maintain security policies across shared IT infrastructure resources, specify the order of operations, validate deployed configurations, perform post-deployment validation, handle failure scenarios, and more.

## Solution architecture

Cisco and Red Hat make it easy to deploy technologies and implement effective containers and PaaS infrastructure. Verified, lab-tested architectures provide detailed design and implementation guidance that helps reduce risk and guesswork by giving your administrators and architects a guidebook for implementation.

Our PaaS solution, depicted in Figure 2, consists of Cisco UCS B200 M5 blade servers, Cisco UCS C220 and C240 M5 rack servers, Cisco UCS fabric interconnects, and Cisco Nexus® switches. All server nodes include solid-state disk drives (SSDs) and run Red Hat OpenShift Container Platform. The SSDs are managed by Red Hat Gluster Storage, providing a storage pool that is massively scalable, highly resilient, and high performing.

With this innovative solution, your DevOps teams can:

- **Use a cloud delivery model and simplify continuous delivery of applications and services.** Deployment of containers hosted on programmable IT infrastructure

allows your DevOps teams to request the IT resources they need through an easy-to-use portal and receive those resources on a moment's notice. With consistent and isolated configurations, your applications can be hosted on optimized platforms that meet your performance, availability, security, and other policy requirements.

- **Simplify application lifecycle management.** Your teams can use the platform to continuously develop and deploy applications, or simply deploy a fully developed application onto a platform instance. The use of containers—a lightweight and portable way to bundle an application stack—decouples the application from the underlying platform. That means that your developers can create hundreds or thousands of containers, use them to determine the best configurations and settings, and move the chosen container to production without having to modify the application.

## Next steps

Let's talk about your need to move to a DevOps model. If you would like to learn more about how this solution delivers the power, performance, and flexibility you need to support continuous development and delivery of applications, call your Cisco representative or visit the [Cisco Partner Locator](#) to find your closest Cisco partner. You can learn more at [cisco.com/go/redhat](https://www.cisco.com/go/redhat).