EXECUTIVE SUMMARY

In this digitized age, with decisions increasingly driven by data and consumers who expect that there’s always an “app for that,” it’s not easy to be a CIO. Nowhere is this truer than in government, where budgets are shrinking while public sector IT departments are being asked to deliver more value every year—whether by building shared services, increasing security, being prepared to react to emergency situations, or just being more responsive to constituents.

In fact, the gap is widening between what public sector IT is expected to deliver and what business-as-usual can provide. Closing this IT services gap, this IT delivery gap, is not optional. And it’s happening with or without IT involvement. In a recent survey, 43 percent of US federal government respondents answered that their employees’ use of cloud apps and mobile devices was already making their organization move faster to the cloud.1 Unless IT can simultaneously make this move and close the gap for its users without sacrificing security and compliance, users will procure outside services on their own—bringing increased cost, complexity, and risk that further widens the gap.

These new solutions, of course, must exist alongside an agency’s existing systems. That means linking and managing both new and existing services and workloads across both new and existing infrastructure. It also creates an opportunity to make applications and data portable across multiple agencies and contractors.

In this whitepaper, we discuss:

• Three critical problems that IT organizations need to solve and why it’s important to address all of them at once.
• How an open, hybrid cloud architecture serves as a bridge between existing IT infrastructures and a cloud.
• How Red Hat can partner with you to close the gap with our broad portfolio of products, which are used by more than 90% of Fortune 500 companies* and throughout the federal government, from processing Medicare claims at the CMS to handling airplane traffic at the FAA to enhancing every tactical vehicle in the DOD, and in all 50 states.

* Red Hat client data and Fortune 500 list, 2013

INTRODUCTION

At most an average of about 70% of IT spending is dedicated to ongoing operations and maintenance. This is just one of the many data points illustrating how IT organizations spend most of their time and resources on mundane operational tasks. So much effort goes to maintaining the status quo in large part because today’s environments are complex and heterogeneous; enterprises are managing a large mix of different physical, virtual, and cloud environments plus a wide diversity of application technologies.

Yet—even though most IT budgets are roughly flat—customer expectations and associated demands on IT teams are rising. CIOs and their staffs are increasingly expected to partner with the business to deliver innovation that drives up revenue and creates new customer engagement opportunities.

This mismatch between the demands of the business and what current IT teams can deliver creates an IT services gap.

A COMPREHENSIVE CLOUD CLOSES THE INNOVATION GAP

A cloud can close this gap through properties, such as fast access to compute resources, which public clouds deliver. The result? “By the end of the decade, IDC expects at least 80 percent of the industry’s growth, and enterprises’ highest-value leverage of IT, will be driven by cloud services and the other third-platform technologies.”2 Think of this transition as the transformation of IT into a broker of services delivered to users from multiple sources—from both in-house infrastructure and third-party cloud architectures.

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CLOSING THE GAP

Gartner splits CIO spending priorities into two broad buckets: “Renovate the Core” and “Exploit the New.” Renovation comes through increased IT efficiency and agility. Streamlining and modernizing IT frees up dollars to be redirected toward innovation. A renovated core also results in more dynamic infrastructure that can then serve as a foundation for exploiting new technologies and opportunities through improved developer productivity and enhanced business agility.

In this way—even with fairly flat IT budgets—IT executives can start planning to dedicate money and people to delivering business value that, today, go to routine operations and maintenance activities.

Increasing IT efficiency, improving developer productivity, and enhancing business agility each individually help close the gap between what the business demands of IT teams and what traditional IT infrastructures can deliver. But fully closing the gap—and thereby flipping maintenance spend and innovation investment—requires doing all three.

INCREASE IT EFFICIENCY WITH IaaS

Consider how developers or other users traditionally gain access to IT resources. They fill out a form or send an email to request a new server. This request then winds its way through a workflow that is typically fulfilled after some weeks have passed. Virtualization, taken by itself, provides some of the tools to quickly provision new servers, but it’s more focused on server consolidation and cost reduction than it is on automation and improved efficiency.

By contrast, IaaS makes IT much more efficient. Red Hat Enterprise Linux OpenStack Platform provides automation that lets IT respond dynamically to changing conditions rather than waiting weeks to provision new capacity. And it provides self-service for that infrastructure so that users can gain access to necessary resources in minutes rather than weeks. Standard operating environments and other tooling dovetail with IaaS to enable scaling up compute resources without also scaling up management overhead.

IMPROVING DEVELOPER PRODUCTIVITY WITH PaaS

As you start to provide increased efficiency with a cloud architecture, it’s also important to focus on making developers productive. Developers are the ones creating the new apps, services, and features that your business needs. They need to deliver streams of those new capabilities to market as quickly as possible. And to do so, they need to be able to focus entirely on writing new code without the overhead burden of setting up and maintaining infrastructure, environments, and supporting services.

This is where Platform-as-a-Service (PaaS) comes in. PaaS is focused on making developers much more productive by allowing them to focus on their development experience. For example, a PaaS allows a new developer to immediately access everything needed to work on a company’s mobile apps or billing services.

A PaaS gets apps to market faster. A PaaS, such as OpenShift by Red Hat, can also provide choice in languages, frameworks, and tools for continuous integration, software build, and other functions, while also allowing for customizations based on the requirements of a given project.3

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3 With OpenShift, if something isn’t available out of the box, a cartridge mechanism allows for packaging homegrown libraries and frameworks, or third party services, as cartridges, slot them into OpenShift, and thereby extend the platform capabilities.
"By 2017, while 50% of customer-facing applications should be architectured for Web-scale deployment patterns, only 10% will meet that standard."

GARTNER PREDICTS 2014: ENTERPRISE APPLICATION ARCHITECTURE WILL ENABLE AGILE DEVELOPMENT AND WEB-SCALE AVAILABILITY, DECEMBER 2013, G00259100

It is projected that by 2016, open source software will be included in mission-critical software portfolios of 99% of Global 2000 enterprises, up from 75% in 2010.

SOURCENINJA, "THE HISTORY OF OPEN SOURCE SOFTWARE"

At the same time, organizations can use a PaaS to standardize development and deployment workflows on specific libraries, databases, or other company-specific options. In this way, a PaaS brings benefits to IT operations and even the business overall by allowing developers to work with familiar platforms while (largely transparently) standardizing and coordinating activities across the company.

ENHANCING BUSINESS AGILITY WITH APPS AND MANAGEMENT

But it’s insufficient to just provide efficient infrastructure and enable developers to be productive. Applications need to connect back to the business. At the end of the day, this is what enterprises are trying to do; they’re seeking business value based from the new cloud platforms that they’re bringing into their IT organizations.

Next-generation applications need to be able to serve a diverse set of clients, including mobile ones. They need to scale out rapidly. They need to respond to the very dynamic, real-time needs of businesses delivering their services to their customers.

Businesses also need to tie all these new applications and services in the cloud back to their existing back-end services and data. Enterprises aren’t going to replace or move everything they have today to a new on-premise infrastructure or a public cloud. They still need to access their customer databases and services that they’ve built over time, connecting them to the new capabilities that they’re building. Moving business-oriented middleware into the cloud, which is a service Red Hat provides with its xPaaS offering, can provide these capabilities.

Finally, IT organizations need a unifying interface, such as Red Hat CloudForms, to let them manage all their services, applications, and workloads—regardless of what vendor they’re from or where they’re located—and maintain policy-based control and governance over their entire environments.

CONNECTING FROM TODAY

Addressing IT efficiency, developer productivity, and business agility provides the means to build new application infrastructures for new cloud workloads. However, the majority of today’s workloads run on more traditional infrastructures. So you must connect this new architecture and this new set of capabilities back into existing infrastructure, existing applications, and existing processes. And, as you add more cloud capabilities and technologies to your environment, you need to incorporate them as well. Therefore, it’s critical to have an open and hybrid architecture.

Open provides interoperability and access to a diversity of technologies. You won’t be locked into one vendor, but rather will to be able to bring the benefits of cloud pervasively, across everything that you’re doing.

Hybrid enables an architecture that’s not just a brand new cloud, but one that also encompasses existing workloads and infrastructure and other cloud environments—whether physical systems, virtualized environments, or public clouds.

IaaS

Taking an open and hybrid approach to cloud connects new IaaS capabilities back into traditional enterprise IT infrastructure. For example, a portable compute environment lets you spin up the same workloads on an OpenStack IaaS or on existing physical servers, virtualization platforms, or public cloud providers. This allows IT organizations to choose the public cloud providers that provide the right business terms and pricing for a given workload at a given time—or to deploy their own infrastructures on-premise—while maintaining the flexibility to move those workloads in the future if it makes sense to do so.
“Especially in larger enterprises, consider the evolution to hybrid cloud computing as part of a broader strategy to position IT as the broker for a broad mix of IT services delivered in many different ways—hybrid IT.”

GARTNER, DESIGN YOU CLOUD WITH HYBRID IN MIND, THOMAS BITTMAN, FEBRUARY 2012, UPDATED 2013, G00230748

But it’s not enough just to be able to take workloads and run them in different locations. Software-based, distributed storage, which Red Hat Storage Server provides, connects data in a new cloud architecture with data from an existing infrastructure. It also replicates data across multiple datacenters on public and private clouds. Share the rich set of data and applications that your business depends upon across your heterogeneous hybrid IT infrastructure and make them accessible throughout your entire IT environment.

PaaS

In adopting a PaaS, it’s important to have access to application platforms that span your entire IT environment and have the same broad choice of application languages and frameworks available pervasively. Even as developers move toward PaaS, toward new cloud-style application development, this lets you also use the same set of application platforms, processes, and tools for your traditional IT development, manage your development workflow cohesively, and still standardize on the same platforms.

With OpenShift, for example, developers can bring their existing applications into a PaaS. They can develop on OpenShift but maintain the flexibility to take their applications into development and test on standard virtualization or production on physical infrastructure.

Thus, you gain access to new technologies and approaches, such as NoSQL and DevOps, but aren’t forced to adopt them if you’re not ready or if they don’t fit within your particular environment. You gain interoperability and portability, while standardizing your application platform across your entire environment.

APPLICATIONS AND MANAGEMENT

Finally, as we consider the business agility that you need to achieve and the applications that you need to integrate, you need business rules, mobile services, and data integration that work not just in new as-a-service platforms but that can tie back into existing IT infrastructure.

For example, with Red Hat JBoss xPaaS Services for OpenShift, if you can stand up a service in your cloud while still integrating back into a data store running on a traditional SQL database running on a physical server or an enterprise virtualization platform. If you want to go ahead and provide business process orchestration that spans your cloud, as well as your traditional IT infrastructure, you can go ahead and do that as well. You can tie together higher level business value across the cloud, as well as within your traditional IT infrastructure.

You also want to be able to provide business process orchestration that spans your cloud, as well as your traditional IT infrastructure. With an open and hybrid approach, such as Red Hat CloudForms takes, you can do these things. Likewise, from an operations standpoint, the same tools can manage IT policy, display executive dashboards, and monitor workloads, not just on your new cloud infrastructure, but across an entire IT environment.
OPEN HYBRID CLOUD

THE RED HAT APPROACH

Red Hat offers the solutions to help you adopt a truly open, hybrid architecture. At the same time, Red Hat’s approach to portability and interoperability mean that you can also maximize your existing investments and integrate back into your existing infrastructure as required.

Red Hat Enterprise Linux is the foundation. We’ve been extending Linux in areas such as multi-tenant security, performance, and scalability to make it the best application infrastructure platform for the cloud. Enterprises can continue to take advantage of Red Hat Enterprise Linux while Red Hat Enterprise Linux OpenStack Platform delivers a robust, fast-moving OpenStack controller to securely scale it out as an IaaS.4

As a leader in the OpenStack community**, Red Hat is contributing to innovative functionality.6 Red Hat also provides the project in a tightly integrated and certified product, with enterprise life-cycles.4 Red Hat Enterprise Linux OpenStack Platform provides an excellent application platform for cloud workloads with its large ecosystem and advanced features for writing new applications.

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5 For example, Red Hat Storage Server is building out a very sophisticated software defined storage capabilities that plug into OpenStack.

To make this open, hybrid cloud architecture easy to manage, Red Hat Satellite provides a set of system management tools that give you configuration management at scale, entitlement management at scale, and provisioning capabilities at scale.

Red Hat’s approach with OpenStack lets you build a scalable infrastructure built on Red Hat Enterprise Linux, which provides you with a familiar, consistent interface across physical servers, virtual infrastructure, and—through the Red Hat Certified Cloud Provider Program—public clouds. Furthermore, Red Hat Enterprise Linux containers and Red Hat’s partnership with Docker provide a strong foundation for integrating PaaS.

OpenShift by Red Hat’s PaaS takes advantage of Red Hat Enterprise Linux, Red Hat JBoss Middleware, and all the associated work that makes it a productive and full-featured environment for Java EE development. OpenShift, whether on-premise or online, also lets developers work with a wide range of languages, frameworks, and tools such as PHP, Python, Ruby, Maven, Jenkins, and Eclipse.

With OpenShift, because developers are already using the same platforms that they know and love, they can bring their existing applications into OpenShift. They can develop productively on OpenShift while maintaining the flexibility to take their applications into development and test on standard virtualization or production on physical infrastructure.

Red Hat JBoss xPaaS services for OpenShift provide not just an application platform but also integration services in the cloud, mobile services in the cloud, and business process management in the cloud. This allows the integration of new applications into services on existing infrastructure. It allows for servicing new mobile applications and orchestrating business processes in a very efficient way.

Finally, Red Hat CloudForms provides a unifying interface for managing services, applications, and workloads in the cloud across multiple providers—it supports not only OpenStack but also VMware and Amazon. It manages not just Linux guests but Microsoft Windows ones too. It provides a unified self-service portal for IT service consumers while enabling the operational management of all the services in your IT environment to which you’re building access.

“Hybrid cloud, and by extension hybrid IT, is here to stay. Few companies will only do public or only do private cloud computing, and no company should miss the opportunity to leverage both. In the end, a hybrid of private and public cloud, noncloud, and multiple public cloud services will serve the needs of more companies than any one cloud model alone.”

HYBRID CLOUD IS DRIVING THE SHIFT FROM CONTROL TO COORDINATION, GARTNER SEPTEMBER 2013, G00252934
CONCLUSION

IT departments need to refocus on driving innovation rather than performing routine maintenance if they want to become strategic partners to an organization's lines-of-business. Doing so requires increasing IT efficiency with IaaS, improving developer productivity with PaaS, and enhancing business agility with applications and management. It also requires connecting these new capabilities to your existing infrastructure, platforms, and processes so that new benefits accrue everywhere—not just in your new environments.

Red Hat offers a comprehensive cloud portfolio that not only improves your IT efficiency and enhances your developer productivity, but also enables you to gain business agility. This portfolio runs the gamut from Linux to storage, middleware, PaaS, xPaaS, and hybrid cloud management—together with consulting and training offerings and award-winning*** support. This comprehensiveness allows Red Hat to close the entire gap between business demand and traditional IT—not just a portion of it.

At the same time, Red Hat’s open hybrid cloud approach brings the benefits of cloud across all your IT, whether existing or new, with no lock-in. Analysts and others widely recognize that modern IT is inherently hybrid and not under the control of any single vendor. And open source—together with other aspects of openness such as open standards—is pervasive throughout the cloud computing landscape. Indeed, cloud computing and the Internet as we know them today would not be possible without open source.

Only Red Hat enables you to build a comprehensive and open hybrid cloud architecture.

***Association of Support Professionals, 2013

ABOUT RED HAT

Red Hat is the world’s leading provider of open source solutions, using a community-powered approach to provide reliable and high-performing cloud, virtualization, storage, Linux, and middleware technologies. Red Hat also offers award-winning support, training, and consulting services. Red Hat is an S&P company with more than 80 offices spanning the globe, empowering its customers’ businesses.