Modernizing RHEL VDC

The Strategic Shift from VMWare to OpenShift Virtualization

crossvale

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Summary

Virtualization has been a key enabler of digital transformation for many enterprises, allowing them to optimize their IT resources, reduce costs, and improve performance.

However, traditional virtualization solutions often come with challenges such as vendor lock-in, complex management, limited scalability, and security risks.

Red Hat Enterprise Linux for Virtual Datacenters (RHEL-VDC) is a subscription offering that provides a stable, secure, and supported platform for running virtualized workloads on any hypervisor. RHEL-VDC enables enterprises to benefit from the innovation and reliability of Red Hat Enterprise Linux (RHEL), the world's leading enterprise Linux platform, while maintaining compatibility with their existing virtualization infrastructure.

Enterprises have different motives for revisiting their choices; some want to have a way out and prevent vendor lock-in, some want to reduce licensing cost, some want to enhance the features around containers or to build a hybrid cloud that can support a new modernization program. No matter the motive, there are many benefits from undertaking an initiative like this and we will examine them in this white paper.

OpenShift Virtualization enables enterprises to migrate their existing virtualized workloads to OpenShift, and run them alongside containerized applications, without requiring any changes to the underlying operating system, applications, or tools. OpenShift Virtualization provides a unified platform for managing both virtual machines (VMs) and containers, simplifying the operations and governance of hybrid cloud environments.

In this whitepaper, we will tell you the story of how OpenShift Virtualization can help you migrate your virtual workloads to OpenShift, and how you can benefit from the advantages of cloud-native computing. We will also share with you some of the pain points and challenges that enterprises face when migrating from VM to OpenShift Virtualization, and how you can overcome them with the help of Red Hat's expertise and support. Finally, we will present a use case of how an enterprise can migrate from RHEL 6, RHEL 7+, or other Linux distributions to OpenShift Virtualization, and achieve significant improvements in performance, efficiency, and security.

Why Do I Need To Do It?

Why would I change something that is working? Not every company does it for the same reason, but in our experience, working with multiple Enterprises of different sizes, these have been the reasons and implications that have created the need for them to do it.

Vendor support	Red Hat Virtualization support varies by version. While older versions (4.0-4.2) are end-of-life, newer versions (4.3 and 4.4) still have extended or maintenance support until 2025 and 2026 respectively. Companies using outdated versions may need to upgrade or consider alternatives for their virtualization needs.
OS Support	Many companies use Linux distributions like CentOS, RHEL6, RHEL7. When these versions lose support, they need to move/standardize on an OS version that has Enterprise level service.
Virtualization vendor shakeout	The virtualization vendor market is changing, and many companies are evaluating what is the best solution for their specific needs or want to have a backup plan. Companies using Windows and Linux solutions are rethinking whether to specialize or standardize.
Modernization capabilities	These companies want to have a hybrid/multi cloud strategy and keep their on-prem capability. They want to be confident with containers and give their business units the speed and flexibility they need while keeping or improving their budgets.
Commercial-Off-The-Shelf (COTS) Support	Some vendors are only offering their new versions to run on OpenShift/Kubernetes and that creates a need that can be used for much more. IBM WebSphere, IBM Maximo, SAS Viya, AI, are some examples of solutions supported only on OpenShift/K8s.

RedHat OpenShift includes the entitlement to run as many RHEL instances as desired inside of OpenShift in containers or VMs. Many companies running RHEL-VDC subscriptions are reconsidering moving to OpenShift to optimize their licensing budgets.

The Benefits of OpenShift Virtualization

OpenShift Virtualization is a feature of OpenShift that enables you to run and manage VMs on OpenShift, using the same tools and processes that you use for containers. OpenShift Virtualization is based on the open-source project KubeVirt, which extends Kubernetes to support VMs as first-class citizens.

OpenShift Virtualization leverages the power and flexibility of OpenShift.

Consistent and simplified management

You can use the same OpenShift console, CLI, and APIs to manage both VMs and containers, reducing the complexity and overhead of managing multiple platforms. You can also apply the same policies, security, and compliance standards across your hybrid cloud environment, ensuring consistency and governance.

Scalability and elasticity

You can scale your VMs and containers up and down as needed, using the same Kubernetes mechanisms, such as horizontal pod autoscaling using custom metrics such as queue size or more standard metrics like CPU or memory. You can also leverage the dynamic provisioning and storage classes of OpenShift to allocate and deallocate storage resources for your VMs and containers, optimizing your resource utilization and efficiency.

Automation and orchestration

You can automate and orchestrate your VMs and containers using the same OpenShift tools and processes, such as operators, Helm charts, and Ansible. You can also integrate your VMs and containers with the same OpenShift services and capabilities, such as service mesh, serverless, pipelines, and monitoring, enhancing your agility and productivity.

Portability and interoperability

You can run your VMs and containers on any cloud or on-premises infrastructure, using the same OpenShift platform, ensuring portability and flexibility. You can also interoperate your VMs and containers with other OpenShift applications and services, such as databases, messaging, and analytics, enabling innovation and collaboration.

Security and reliability

You can secure your VMs and containers using the same OpenShift security features, such as encryption, authentication, authorization, and network policies, protecting your data and applications. You can also rely on the same OpenShift reliability features, such as high availability, disaster recovery, and backup and restore, ensuring availability and resilience.

By migrating your RHEL-VDC workloads to OpenShift Virtualization, you can take advantage of these benefits and transform your virtual datacenters into cloud-native environments, where you can run both VMs and containers in a seamless and integrated way.

The Challenges of Migrating to OpenShift Virtualization

Migrating your workloads to OpenShift Virtualization is not a trivial task. It requires careful planning, preparation, and execution.

You should also consider addressing some of the common pain points and challenges that enterprises face, such as:

Assessing your current environment

You need to have a clear understanding of your current virtualization environment, such as the number, size, and configuration of your VMs, the applications and services that run on them, the dependencies and interactions among them, and the performance and availability requirements they have. Identify the potential risks and issues that might arise during the migration process, such as compatibility, security, and downtime.

Choosing the right migration strategy

You need to choose the right migration strategy for your workloads, depending on your business objectives, technical feasibility, and resource availability. You can choose between different migration strategies, such as lift-and-shift, refactor, or rearchitect, each with its own pros and cons. Decide whether to migrate your workloads in batches or in phases, and how to test and validate the migration results.

Executing the migration process

You need to execute the migration process with minimal disruption and impact to your business operations, users, and customers. You need to ensure that your workloads are properly migrated to OpenShift Virtualization, without losing any data, functionality, or performance. You also need to monitor and troubleshoot the migration process and resolve any errors or anomalies that might occur.

Optimizing your migrated environment

You need to optimize your migrated environment to fully leverage the benefits of OpenShift Virtualization and achieve your desired outcomes. You need to optimize your VMs and containers for performance, efficiency, and security, using the best practices and recommendations of OpenShift. You also need to optimize your operations and governance for agility, scalability, and reliability, using the tools and processes of OpenShift.

To overcome these challenges and successfully migrate your workloads to OpenShift Virtualization, we would encourage you to **get the assistance of a trusted and experienced partner, like Crossvale,** who can guide you through the migration journey, and provide you with the support and expertise you need.

A Use Case of Migrating to OpenShift Virtualization

To illustrate how OpenShift Virtualization can help you migrate your workloads to OpenShift, and how Crossvale can support you in the migration process, let's look at a use case of an enterprise that migrated from RHEL 6, RHEL 7 and consolidated other Linux distributions to OpenShift Virtualization, and achieved significant improvements in performance, efficiency, and security and reduced overall cost of the solution.

The enterprise is a global provider of financial services, with thousands of VMs running on RHEL 6, RHEL 7 and other Linux distributions. They run primarily on VMware, but they also have some workloads on various hypervisors, such as KVM, or Hyper-V from previous acquisitions. The main goal was to reduce complexity in the environment, reduce vendor lock-in and modernize its data centers.

The enterprise faced several challenges in migrating its VMs to OpenShift Virtualization, such as:

- The enterprise had a large and diverse portfolio of VMs, with varied sizes, configurations, applications, and services, and with different performance and availability requirements.

- The enterprise had complex dependencies and interactions among its VMs, and with other applications and services, that needed to be preserved and maintained during and after the migration.

- The enterprise had strict security and compliance standards that needed to be applied and enforced across its VMs and containers, and across its hybrid cloud environment.

- The enterprise had limited time and resources to execute the migration process, and to minimize the disruption and impact to its business operations, users, and customers.

The enterprise partnered with Crossvale to migrate its VMs to OpenShift Virtualization, and to overcome the challenges that it faced.

Crossvale lead the project from design to implementation and operation following the next steps:

Evaluation and strategy

Crossvale evaluated the enterprise's existing virtualization environment and provided it with a migration plan that matched its requirements and objectives. During this phase, risks and issues were discussed, and mitigation plans created to ensure the success of the project.

Migration and validation

Crossvale migrated the enterprise's VMs to OpenShift Virtualization, using the lift-and-shift method and the OpenShift Virtualization Migration Toolkit, re-platforming or re-architecting as needed. A validation process was created to assign responsibilities and steps to validate the migration.

Optimization and support

Crossvale PodOps managed the environment for the initial year, providing the customer access to a Crossvale Principal Architect to assist with platform adoption. PodOps continues to perform weekly optimizations, ensuring all workloads run efficiently on the platform.

Platform Adoption

Once the VMs had been migrated and the platform was stable, new DevOps and GitOps processes were created to deploy re-architected and new workloads designed to run on OpenShift/K8s.

By migrating its VMs to OpenShift Virtualization, the enterprise achieved significant improvements in performance, efficiency, and security, such as:

Leveraging RedHat OpenShift meant removing all the RHEL-VDC subscriptions and removing all technical debt from out of support OS saving thousands of hours in support and a substantial amount in subscriptions.

30%

The enterprise reduced its VM footprint by 30%, by consolidating its VMs and containers on OpenShift, and by leveraging the dynamic provisioning and storage classes of OpenShift.

40%
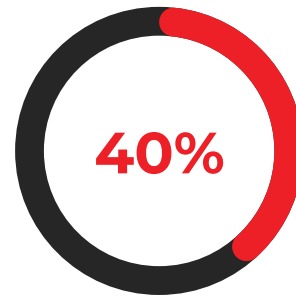
The enterprise increased its VM performance by 40%, by scaling its VMs and containers up and down as needed, and by integrating its VMs and containers with the OpenShift services and capabilities, including service mesh, serverless, pipelines, and monitoring.

48%
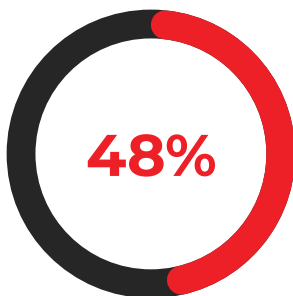
The enterprise streamlined its security by reducing the tools, achieving savings of 48% without accounting for the personnel time and training.

80%
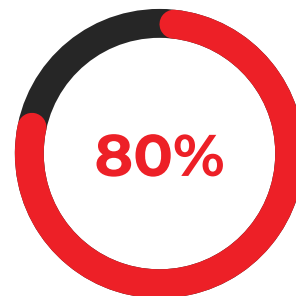
Relying on PodOps saved the company more than 80% compared to the cost of supporting the previous environment with multiple teams available 24/7/365.

The enterprise also benefited from the advantages of cloud-native computing, such as:

- The enterprise simplified and unified its management of both VMs and containers, using the same OpenShift console, CLI, and APIs, reducing the complexity and overhead of managing multiple platforms.

- The enterprise enhanced its agility and productivity, by automating and orchestrating its VMs and containers using the same OpenShift tools and processes, such as operators, Helm charts, and Ansible.

- The enterprise increased its flexibility and portability, using the same OpenShift for all workloads in all infrastructures, managed from a centralized control plane. GitOps adoption also simplified their pipelines allowing them to deploy new clusters or having recovery mechanisms without impacting developers.

- The enterprise enabled its innovation and collaboration, by interoperating its VMs and containers with other OpenShift applications and services, such as databases, messaging, and analytics.

The enterprise was very satisfied with the migration results, and with the support and expertise that Crossvale provided. The enterprise continued to partner with Crossvale, to further optimize its migrated environment, and to explore new opportunities and possibilities with RedHat OpenShift.

Conclusion

OpenShift Virtualization is a feature of OpenShift that enables you to migrate your virtualized workloads to OpenShift, and run them alongside containerized applications, without requiring any changes to the underlying operating system, applications, or tools. OpenShift Virtualization provides a unified platform for managing both VMs and containers, simplifying the operations and governance of hybrid cloud environments.

By migrating your VM workloads to OpenShift Virtualization, you can benefit from the advantages of cloud-native computing, such as consistent and simplified management, scalability and elasticity, automation and orchestration, portability and interoperability, and security and reliability.

However, migrating your VM workloads to OpenShift Virtualization is not a trivial task. It requires careful planning, preparation, and execution, as well as addressing some of the common pain points and challenges that enterprises face, such as assessing your current environment, choosing the right migration strategy, executing the migration process, and optimizing your migrated environment.

To overcome these challenges, you need the help of a trusted and experienced partner, who can guide you through the migration journey, and provide you with the support and expertise you need.

Red Hat is the world's leading provider of hardened enterprise grade open-source solutions, and the creator and maintainer of RHEL, OpenShift, and OpenShift Virtualization. Crossvale maintains the highest-level partnership with Red Hat, that only a handful of other globally are members of and has the knowledge, experience, and resources to help you migrate your workloads to OpenShift Virtualization and achieve your business goals.

Crossvale can help you with assessment and planning, migration and validation, optimization and support, and more. By partnering with Crossvale, you can migrate your VM workloads to OpenShift Virtualization with confidence and ease and enjoy the benefits of cloud-native computing.

If you are interested in migrating your VM workloads to OpenShift Virtualization and want to learn more about how Crossvale can help you, please visit **vmware.crossvale.com** or contact us at **sales@crossvale.com**.

About Crossvale™, Inc.

Discover more about Crossvale™, Inc., a leading provider of IT consulting and solutions, including their areas of specialization and commitment to helping organizations achieve their technology goals.

Introduction

Crossvale™, Inc. is a leading technology consultancy firm at the forefront of empowering organizations to embrace digital transformation and navigate the complex landscape of modern technology. Founded on the principles of innovation, expertise, and client-centricity, Crossvale™ has emerged as a trusted partner for businesses seeking to harness the full potential of cutting-edge technologies.

Our Mission

At Crossvale™, we're passionately dedicated to reshaping IT landscapes through our expertise in Automation, Containerization, and App Modernization. Our mission is anchored in delivering comprehensive, tailored solutions that activate a rapid embrace of modernization, using our PodOps Pro™ for OpenShift Managed Service as the foundation of success for our clients compete in the moderner digital world. By emphasizing holistic solutions over mere enablement, we're committed to accelerating our clients' progression from Zero to Confidence, thereby eliminating the need for in-house subject matter experts in the areas we proudly support for them.

Our Expertise

Crossvale™ specializes in a wide array of technology domains, including:

- **Kubernetes and Container Orchestration**
  We help clients harness the power of containerization and orchestration for scalable, resilient, and portable applications.

- **Automation**
  We streamline operations through intelligent automation, reducing manual tasks, minimizing errors, and enhancing efficiency.

- **Digital Transformation**
  We guide organizations in their digital journey, helping them adopt modern practices, agile methodologies, and customer-centric approaches.

- **Open-Source Solutions**
  We leverage open source technologies to deliver cost-effective and innovative solutions that drive business growth.

- **DevOps and CI/CD**
  We enable organizations to accelerate software delivery, improve collaboration, and ensure high-quality releases.

- **App Modernization**
  We help organizations modernize legacy applications, making them more efficient, scalable, and compatible with modern technology stacks.

- **AI and Machine Learning**
  We apply artificial intelligence and machine learning to extract actionable insights from data, driving informed decision-making.

Why Choose Crossvale™

- **Proven Track Record**
  With over two decades of experience, we have successfully delivered transformative solutions to clients across various industries.

- **Global Reach**
  Our global presence enables us to serve clients worldwide, adapting solutions to local needs and regulations.

- **Customer-Centric Approach**
  We prioritize client satisfaction, ensuring our solutions align with their unique goals and challenges.

- **Innovation-Driven**
  We stay at the forefront of emerging technologies, enabling clients to stay ahead of the competition.

- **Skilled Team**
  Our diverse team of experts possesses deep industry knowledge, technical proficiency, and a passion for solving complex problems.

Our Commitment

At Crossvale™, we are committed to driving real, measurable results for our clients. We view every project as an opportunity to make a meaningful impact on their business, helping them unlock new opportunities, streamline operations, and achieve their digital ambitions.

In a rapidly evolving digital landscape, Crossvale™, Inc. remains dedicated to guiding organizations toward success, one innovative solution at a time. Whether it's cloud adoption, automation, or digital transformation, we are the trusted partner that businesses turn to for a brighter, technology-driven future.

Have questions or need further assistance?

Get in touch with Crossvale™, Inc.

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