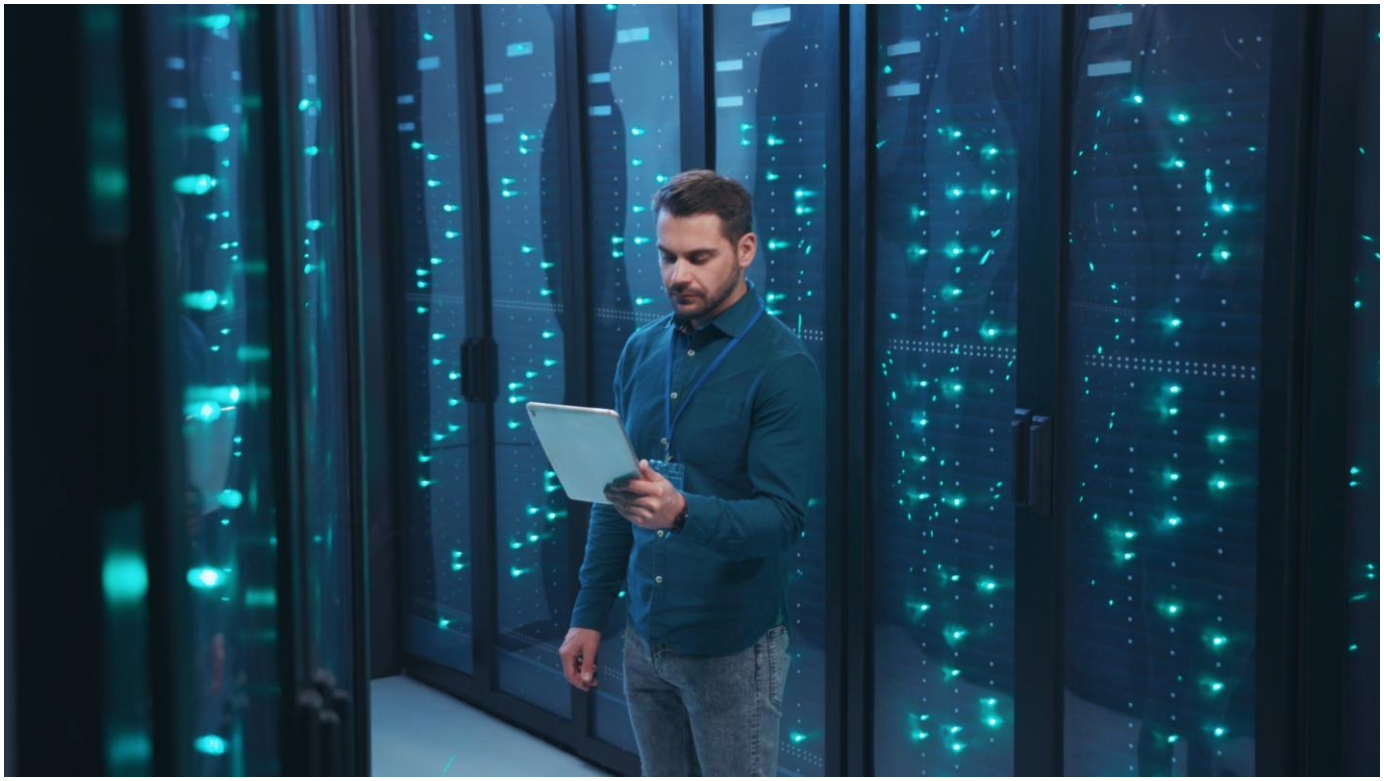
Fsas Technologies
a Fujitsu company

White Paper

Red Hat OpenShift Virtualization on PRIMERGY

Unifying Legacy and Cloud-Native

In an era where traditional virtual machine environments coexist with rapidly evolving cloud-native technologies, organizations face increasing complexity and market shifts. This white paper introduces the “Red Hat OpenShift Virtualization on PRIMERGY” solution from Fsas Technologies, a powerful platform designed to not only optimize your current VM workloads but also seamlessly lay the foundation for a Kubernetes-driven, cloud-native future.



Server virtualization is going the way of the mainframe

Although modern application development increasingly embraces cloud-native technologies such as Kubernetes, serverless, and object storage, the application landscape for many organizations will remain heavily reliant on traditional virtual machines for the foreseeable future. Like mainframe systems, a portion of these VM-hosted applications forms the core of the business ecosystem and will demand sustained support for years to come.

Market Volatility and Budgetary Pressures

The server virtualization market is currently volatile, as a leading vendor's radical shift in customer and partner strategy forces many organizations to seek alternative technology partners. These organizations urgently require infrastructure solutions that are not only essential for business continuity but also align with their increasingly constrained IT budgets.

Meeting Modern Business Demands

Adding to this complexity, IT organizations are simultaneously challenged to meet the business's accelerating demands for AI, robust data storage, data sovereignty, enhanced security, and applications that can rapidly adapt to market changes.

The Rise of Containerization and Kubernetes

This pressure is amplified by the evolving application landscape: while analysts report that less than 10% of existing applications are containerized, approximately 50% of new or replacement application projects are already container-based. This stark contrast underscores the critical need for a stable, scalable, and hybrid Kubernetes platform that can span both on-premises and public cloud environments. The rapid adoption of Kubernetes as the preferred platform for modern applications demands an integrated approach. Organizations need a solution that not only fully supports Kubernetes but also allows it to be efficiently co-hosted and managed alongside existing on-premises virtual machine estates, ensuring the data sovereignty, flexibility, and operational efficiency businesses require.

Introducing Red Hat OpenShift Virtualization on PRIMERGY: Your Hybrid Foundation

This is precisely where Red Hat OpenShift Virtualization on PRIMERGY emerges as the essential on-premises foundation for your cloud-native evolution. Red Hat OpenShift Virtualization delivers this by leveraging the Linux KVM Hypervisor, integrated within the Rancher Kubernetes Engine via Kubevirt technology. This combination creates a common, integrated environment for seamless Kubernetes consumption (when licensed with Red Hat OpenShift Kubernetes Engine or higher).

Core Technology Components: Powering Your Solution

Red Hat OpenShift Virtualization

The Red Hat OpenShift Virtualization environment provides the functionality IT administrators expect to see to administer their virtualized workloads:

- Live migration – the ability to move workloads transparently between physical hosts.
- VM affinity/anti affinity to control where VMs run
- Advanced management policies to control where VMs run and what resources they can consume on the shared platform.
- Support for PCI Passthrough, NVIDIA Driver toolkit to provide access to GPU's from VMs
- Stable, Supported Virtualization platform.
- Integration with Ansible Automation platform for automated configuration, management and migration
- Simplified IT operations via a unified platform for containers and VMs
- Self Service options for VM deployment
- Operate Consistently across on premise and public clouds such as AWS using OpenShift Virtualization on bare metal servers.
- Integrated backup management using built in tools or integrate with platforms from the Red Hat partner ecosystem.
- Migration Toolkit for Virtualization simplifies moving your existing VMs to OpenShift.
- Integrate VMs into OpenShift Pipelines to support CI/CD modes of working.
- Red Hat is a member of Microsoft SVVP ensuring support for Virtualised Microsoft Windows VMs

Single Kubernetes cluster for VMs and containers – when licensed.

PRIMERGY – The green powerhouse

For almost three decades, PRIMERGY servers have delivered unwavering performance and significantly reduced energy consumption. This proven reliability directly translates into less downtime, increased productivity, and a lower total cost of ownership for your business. Our comprehensive portfolio, coupled with a strong commitment to international environmental standards (including EPEAT), ensures a solution perfectly tailored to future-proof your data center.

Leveraging either AMD EPYC with up to 160 cores per socket or Intel Xeon 6 processors with up to 86 cores per socket, the PRIMERGY RX 1xxx (1U) and 2xxx (2U) series of rack mount servers provide a high-performance, reliable, energy-efficient, and manageable platform. This makes them an ideal foundation for your current virtualization environment and the essential stepping stone for your cloud-native evolution.

Data Center Networking with Juniper QFX

A critical factor in selecting an Enterprise Linux Virtualization solution is the network infrastructure connecting clustered compute and storage. Fsas Technologies addresses this with flexible networking options: either a 25Gb/s Ethernet bundle or, for high-throughput workloads, a 100Gb/s Ethernet bundle. Both are built on Juniper QFX switches and include out-of-band management via a dedicated Juniper EX Family switch.

Solution Architectures: HCI vs. CI

Red Hat OpenShift Virtualization on PRIMERGY - HCI

The HCI variant of this solution seamlessly integrates Red hat OpenShift Platform Plus edition with PRIMERGY servers, leveraging high-performance NVMe disks and Juniper Network Bundles. This creates a scalable, reliable, and performant platform for both your virtual machine workloads and, with the addition of the Rancher Suite (refer to our PRIMERGY for Kubernetes Solution), your containerized applications.

This HCI solution utilizes local NVMe disks, with bundled Red Hat OpenShift Data Foundation Essentials software providing the Ceph Distributed Storage platform for Kubernetes. Virtual machine Storage is mapped to Kubernetes volumes, which are mirrored across up to 3 nodes to provide data resilience. All management of storage is carried out in the Virtualization manager GUI, though beyond adding additional disks and monitoring space thresholds there is little to do. The Red Hat OpenShift Virtualization Engine provides integrated backup capability for hosted virtual machines, simplifying your infrastructure landscape even further. Though third-party tools can also be integrated.

Red Hat OpenShift Virtualization on PRIMERGY - CI

For organizations requiring external storage, our Red Hat OpenShift Virtualization on PRIMERGY solution supports Kubernetes volumes for virtual machine storage through a robust third-party integration. Fsas Technologies, in partnership with NetApp, leverages their industry-leading FAS and ASA storage arrays. These arrays deliver both unified (file and block) and block-only protocols, powered by the renowned NetApp ONTAP® data management software. tens of thousands of organizations globally trust NetApp for its proven simplicity and reliability. Our storage consultants will collaborate with you to determine the optimal NetApp platform that meets your virtualization and broader data requirements.

These NetApp arrays integrate seamlessly with the Red Hat OpenShift Virtualization software via the NetApp Trident Kubernetes Container Storage Interface (CSI) Driver. This powerful combination, coupled with our PRIMERGY Servers and Juniper Ethernet switches, provides out-of-the-box access to external NFS (file) and iSCSI (block) storage. For environments requiring Fibre Channel, the solution supports 32Gb or 64Gb Fibre Channel connectivity through the NetApp Trident CSI driver, by introducing Brocade FC Switches.

Standardized Solutions for Rapid Deployment & Scalability

All these technology components have undergone rigorous integration and testing in our engineering labs. Our technical teams have developed a standardized solution with predefined components and validated delivery processes. This meticulous approach ensures that our Professional Services teams can deploy the solution into your environment quickly, reliably, and with consistent results.

Flexible Server Configurations and Performance

Our standardized solution offers flexibility with processor choices, supporting either AMD EPYC or Intel Xeon processors based on your preference. Each server variant is designed to efficiently host multiples of a standard virtual machine profile:

- 2 VCPU
- 10GB of RAM
- 150GB of disk

To ensure high availability and resilience within the cluster, there is always a minimum of one "extra" node dedicated to failover. While a minimum cluster size of three nodes is supported, we recommend a four-node cluster for enhanced availability.

For instance, a three-node cluster (2+1), equipped with 64 cores, 768GB of RAM, and five 6.4TB NVMe drives per server, can easily host 100 standard virtual machines, factoring in 25% growth capacity.

Model	cores	RAM	NVMe Disk	Hosts	VM
RX1440 M2	32	384GB	5x3.2TB	2+1	50
RX2450M2	64	768	5x6.4TB	2+1	100
RX2540M8	64	768	5x6.4TB	2+1	100
RX2540M8	96	1536	8x6.4TB	2+1	150

Should your VM workloads have a unique profile, our experts will work closely with you to map your precise infrastructure requirements onto the Red Hat OpenShift Virtualization on PRIMERGY platform.

Comprehensive Solution Delivery: Beyond Hardware and Software

The Red Hat OpenShift Virtualization on PRIMERGY solution is more than just a combination of software and hardware. Included in the solution cost are professional services, where our trained and experienced engineers ensure a seamless implementation, bringing your new platform to life.

Our standard services encompass:

- **Deployment & Installation:** Full delivery and installation of servers and network switches into your chosen location, whether in your existing racks or within our PRIMECENTER racking solutions.
- **Implementation & Acceptance Testing:** Thorough integration of the Red Hat OpenShift virtualization environment into your data center, followed by comprehensive acceptance testing.
- **Ongoing Support:** For the duration of the warranty period, you'll receive advice and guidance from a dedicated Technical Account Manager (TAM).

To further tailor the solution to your evolving needs, we offer a range of optional services:

- **Virtualization Assessment**: Leveraging our Hybrid Cloud Assessment Service (HCAS) to evaluate and plan your virtualization strategy.
- **Migration Services:** Seamless transition of your existing workloads from legacy virtualization platforms to your new Red Hat OpenShift Virtualization environment.
- **Integration Services:** Connecting the Red Hat OpenShift Virtualization platform with your existing backup and management systems.
- **Lifecycle Services:** Proactive support including regular health checks, capacity reporting, and system upgrade services to ensure long-term stability and performance.

Conclusion: Your Future-Ready Virtualization Platform

If your organization seeks a modern, forward-looking server virtualization platform that seamlessly integrates a market-leading, standards-compliant Kubernetes environment, look no further.

The Red Hat OpenShift Virtualization on PRIMERGY solution, built on proven open-source technology and backed by enterprise-grade support from Fsas Technologies, provides the perfect foundation for your future IT infrastructure needs.

Ready to future-proof your infrastructure and seamlessly bridge your VM and cloud-native worlds?

Learn more about the Red Hat OpenShift Virtualization on PRIMERGY solution:
eu.fsastech.com/eu/redhat-virtualization

Published by
Fsas Technologies
Mies-van-der-Rohe-Strasse 8
D-80807 Munich
www.fsastech.com/en-eu/
2026-01-23