USE CASE: Data Centre (Virtualised and Hyperconverged Infrastructure)

Red Hat OpenShift Virtualization

Version 4.20

Offering summary

OpenShift Virtualization (the "offering")[1] is a Kubernetes operator built on the open source KubeVirt project and KVM hypervisor. Adding custom resource definitions (CRD) to Kubernetes allows the offering to manage virtual machines in a manner similar to containers. Relevant portions of Red Hat's broader portfolio can also be integrated, including Linux and containers, which adds to the offerings appeal for existing Red Hat customers.

Although the offering uses a hypervisor, it takes an unconventional approach that highlights the criticality of treating enterprise-grade virtualised and hyperconverged infrastructure (VHCI) as a platform. It is important not to assume that the offering operates in a manner identical to traditional offerings. As a notable example, it relies on the container storage interface (CSI) and container network interface (CNI) to integrate with third-party solutions. Implementation details will differ for each integration and therefore from the expectation for three-tier infrastructure design[2].

In contrast, the offerings's architecture lends itself to modern, cloud-inspired hyperconverged / software-defined infrastructure. Increased adoption of private AI in the data centre may favour the offering but will require expanded GPU capabilities. Implementing OpenShift's container platform on OpenShift Virtualization is a particular use case that will be easier to justify. Virtified considers the offering (and KubeVirt) as being suited to specific use cases in traditional data centres at this time. The technical complexity of adding Kubernetes to traditional data use cases will be hard to justify when other VHCI offerings have an established record.

Strengths

1. **Containers:** OpenShift Virtualization draws upon Red Hat's investment in OpenShift Container Platform (OCP). As such, the offering is able to integrate with rich set of capabilities for building modern custom applications.
2. **Functionality:** Building on Red Hat's experience, the offering scores well in many of the technical criteria (including Compute and Core).
3. **Vision:** The appeal of the offering spans from Red Hat's Enterprise Linux capabilities through to the promise of distributed AI.

Challenges

1. **Skills:** Kubernetes requires new skills and retraining of existing virtualisation teams. Adding OpenShift Virtualization will increase the degree of change.
2. **Track record**: OpenShift Virtualization is a relatively new VHCI offering with limited adoption in this use case.
3. **Total cost of ownership**: Although OpenShift Virtualization has a relatively attractive price point, implementing the broader OpenShift platform can be cost-prohibitive.
4. **Upgrades:** OpenShift's support lifecycle may dictate frequent, rapid upgrade cycles for data centre use cases.

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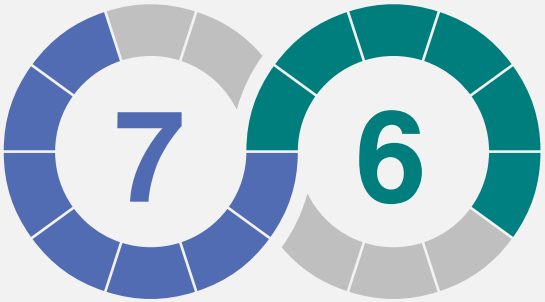

Data centre use case	
Compute	A
Containers & Cloud-Native Integration	L
Core	S
Data Protection & Resiliency	A
Hardware Acceleration & Offload	L
Identity and Access Management (IAM)	S
Management and Administration	L
Memory	S
Network	S
Security	L
Software-Defined Networking	L
Software-Defined Storage	A
Storage Interconnect	L
Storage Services	S
Virtual Resource Management	S
Customer Sentiment (Offering)	?
Documentation	+
IBM	
Financial Viability	S
Corporate Governance	A
Environmental Sustainability	S
Customer Sentiment (Provider)	–
Customer Sentiment (Support)	?
Partner Sentiment (Provider)	?
Value	?

Legend

L	Leader	+	Positive
A	Advanced	/	Neutral
S	Standard	?	Unclear
B	Basic	–	Negative

The Virtified Loops for VHCI evaluate over 100 technical criteria and a specific set of business metrics. Different weightings are applied to each use case. Virtified Loops are an independent and objective review of the provider and offering, which has been undertaken by Virtified Pty Ltd on a best-effort basis and in the interests of supporting improved decision-making. Virtified Pty Ltd does not receive any financial compensation for the analysis contained therein. Put simply, Virtified Loops are not 'cash for comment'.

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Recommendations

1. Conduct a detailed technical analysis before selecting OpenShift Virtualization for traditional data centre use cases in medium or large enterprises. Focus areas should include storage, memory, network, data protection and resiliency.
2. Prioritise OpenShift Virtualization for OpenShift container environments with limited need to support hypervisor-based virtual workloads. Gain experience by focusing on provisioning of ephemeral virtual workloads (including lab and development). Modern hyperconverged workloads are another potential candidate.
3. Demand reference architectures and technical validation before selecting the third-party storage, compute and network resources to be integrated with OpenShift Virtualization.
4. Seek relevant customer references from Red Hat during evaluation and ensure that they reflect your design and use case.
5. Thoroughly validate suitability before deciding to replace VMware with OpenShift Virtualization in complex environments. Perform comprehensive due diligence and undertake pilot implementations.

Key considerations

1. **Culture:** Success with OpenShift Virtualization depends on your organisation's need and ability to adopt modern operational processes for data centre use cases (including DevOps, automation and platform engineering).
2. **Investment:** Red Hat is enhancing the operational experience of the offering to align with traditional virtualisation admins.
3. **Lifecycle:** The dependence on Kubernetes means that the support lifecycle for OpenShift's container platform has direct influence over the offering; Red Hat aims to forecast releases at a 4-month cadence. It also offers extended support options (that may require a fee).
4. **Integration:** OpenShift Virtualization supports open interfaces for storage and network but implementations are vendor-specific. It is critical to ensure support for critical requirements (eg, snapshots and volume expansion).
5. **Technical support**: Red Hat customers generally value the services of their technical account manager (TAM).

Provider summary

Red Hat is owned by IBM. The relationship between both parties is multifaceted, with neither party positioning the other in exactly the same way. Irrespective, Virtified considers Red Hat as being part of IBM and our analysis reflects that viewpoint (unless otherwise stated).

Compared to its main competitors in the VHCI market, IBM trails in growth and margin metrics but maintains solid financial health, indicating sustainability but limited expansion. Its global presence, enterprise reliability and technical expertise are generally considered positives for the provider but perceptions of high cost and licensing complexity are also common.

- Website: **redhat.com**
- Headquarters: USA
- Ownership: Private
- Red Hat employees: 20,000
- Customers:
- Total revenue:

Note 1: Red Hat requested that OpenShift Virtualization not be abbreviated hence we use "offering" for brevity.
Note 2: Three-tier in this context is the separation of compute, storage, and network resources into independent layers, enabling each tier to scale independently for greater flexibility and resilience.

For more information go to virtified.com

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