

Protecting HPE Morpheus VM Essentials using HPE Solutions with Cohesity

Executive Summary

As many businesses reevaluate their virtualization strategy in response to software packaging updates, new technologies, and demands of AI workloads, reducing cost without adding more complexity to their existing environments is key.

By providing a single interface for kernel-based virtual machine (KVM) and VMware® environments, VM Essentials, a new hypervisor offering from Hewlett Packard Enterprise, enables management of both VM Essentials and VMware vSphere® and provisioning of workloads on-demand without any vendor lock-in. This way, customers managing existing virtualized workloads, can migrate to VM Essentials hypervisor, and experience a simple virtual machine (VM)-vending experience across both stacks thus reducing cost and complexity.

Due to the shared nature of underlying hardware, VMs can be the target for attackers to access critical data or propagate malware across a network. Protecting VMs becomes crucial since data compromised on one VM can possibly affect all VMs on the same host.

HPE Solutions with Cohesity DataProtect software is a validated solution for protecting VM Essentials VMs. This protection capability currently utilizes an agent-based backup approach but will be enhanced in the future with native hypervisor integration. Thus enabling support for image-based backups and instant mass restore.

This technical brief offers an overview of how to protect VM Essentials using HPE Solutions with Cohesity.



VM Essentials

VM Essentials is a new virtualization software solution that allows customers to provision and manage KVM and VMware based VMs from a single intuitive interface.

The solution comes with the KVM-based VM Essentials hypervisor that is enhanced to include enterprise-grade cluster management with capabilities such as high availability, live migration, distributed workload placement, integrated data protection, secure hardening, and external storage support.

To enable flexibility for those continuing to host VMware-based applications, VM Essentials can also be used to connect and manage existing VMware clusters. This means unified management and simple VM provisioning across both VM Essentials hypervisor and VMware ESXi™ so you can provision workloads on demand to the right environment, on your terms, with zero lock-in. When you're ready, you can use the included toolset to convert existing VMware images to VM Essentials Software.

VM Essentials is available as standalone software and is planned to be available soon as an embedded part of HPE private cloud offerings starting with HPE Private Cloud Business Edition and later in HPE Private Cloud Enterprise.

VM Essentials supports MongoDB, Microsoft SQL Server, and Oracle® workloads as standalone database deployments.

For more information on VM Essentials, visit: [HPE Morpheus VM Essentials Software](#)

Figure 1 shows the relationship between VM Essentials and the other components. The solution is composed of redundant cluster nodes, storage, and interconnects

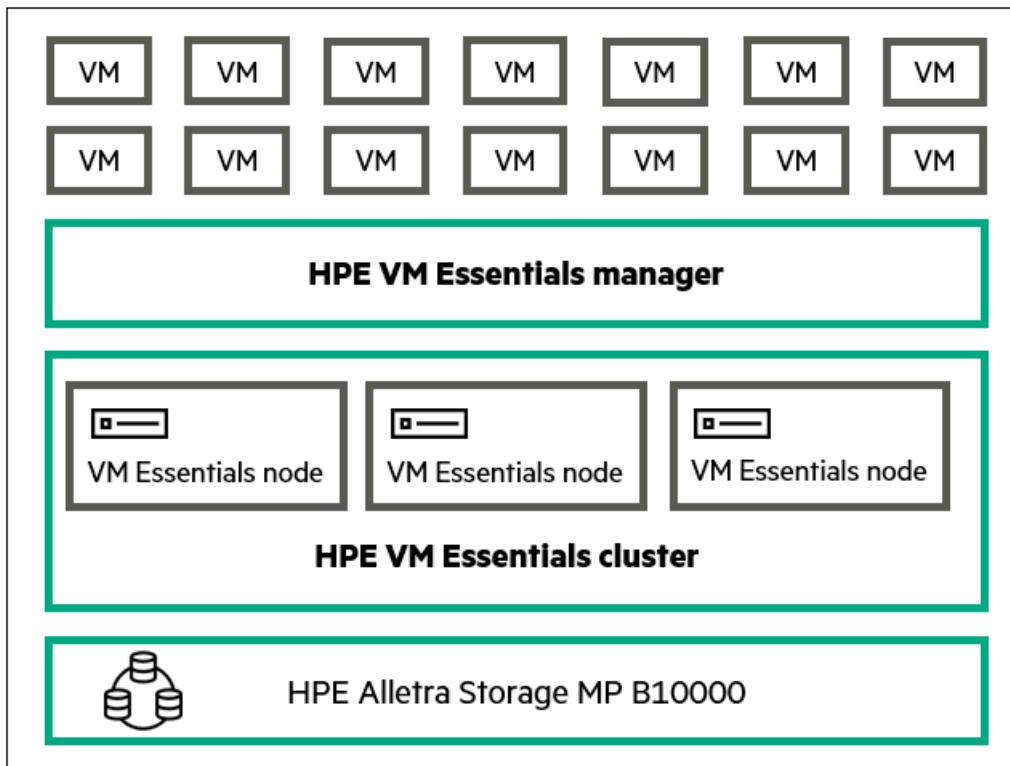


Figure 1. The architecture of VM Essentials components

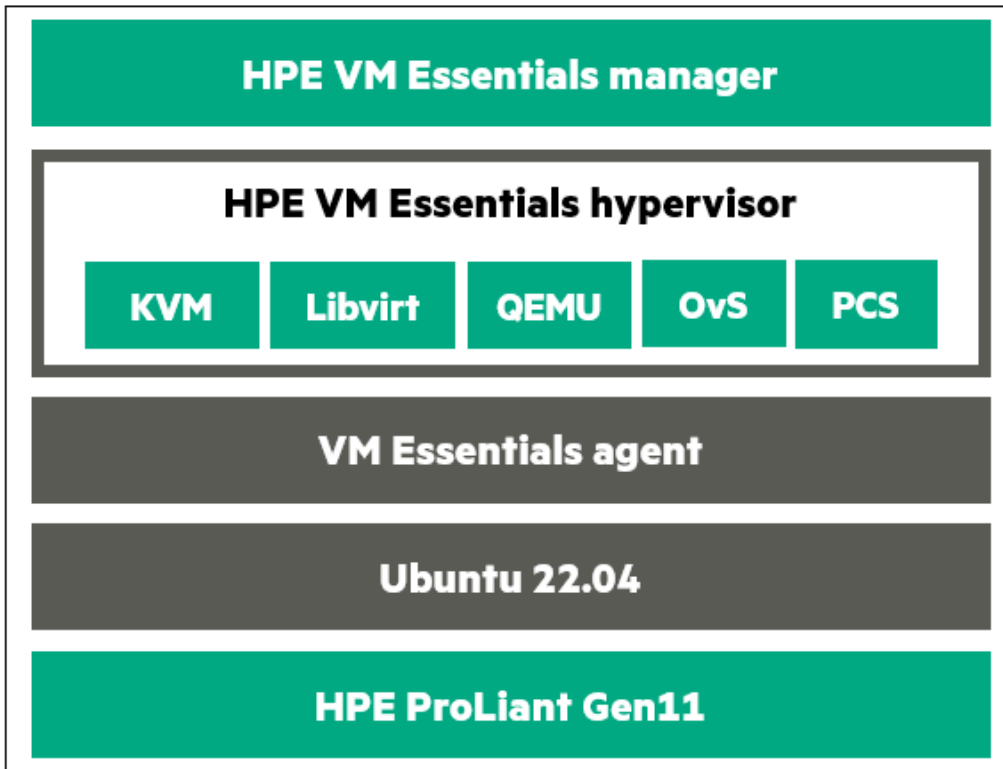


Figure 2. VM Essentials cluster node architecture

The following components are integral to the solution:

Table 1. VM Essentials cluster node components

HPE ProLiant Gen11	VM Essentials hypervisor has been validated on HPE ProLiant Gen11 series servers
Ubuntu	The base OS for the VM Essentials hypervisor is Ubuntu 22.04. The installation of Ubuntu is a requirement for deployment of the hypervisor
VM Essentials agent	The software that runs on each host to collect system stats, logs, and execute operations received from VM Essentials manager
KVM	Underlying virtualization technology used in VM Essentials
Libvirt	A hypervisor-independent API for managing platform virtualization
QEMU	Generic machine emulator and virtualizer for running Windows and Linux® operating systems
Open vSwitch (OvS)	Underlying virtual networking technology used in VM Essentials
Pacemaker cluster service (PCS)	A high-availability cluster resource manager, that enables clustering and clustered filesystem deployment and management
VM Essentials manager	The management server that provides KVM clustering, identity management, VM provisioning, monitoring, logging, web HTML 5 UI, and more, running as a VM in the stack.

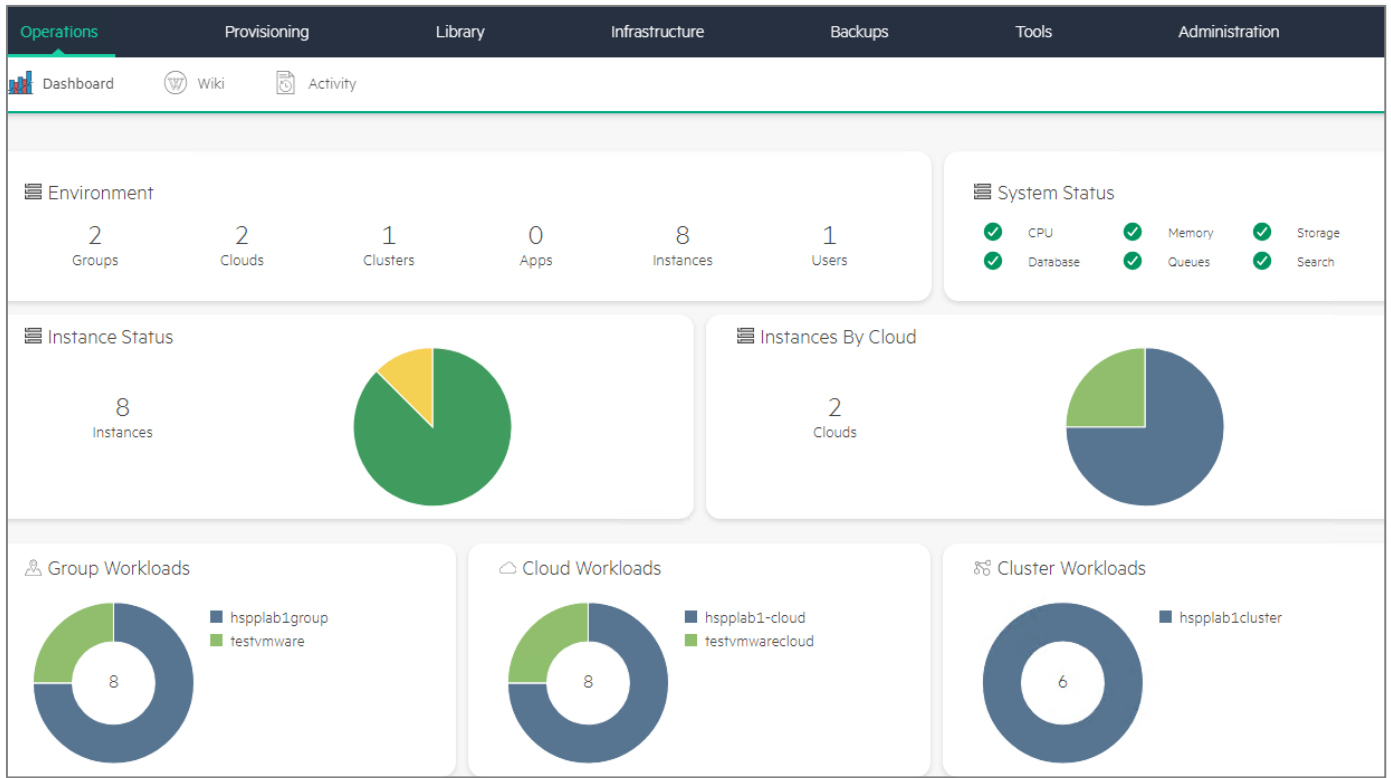


Figure 3. The VM Essential Dashboard

In VM Essentials, VMs are provisioned by creating a resource or service, which may include one or more VMs. To provision a new VM, the user navigates to **Provisioning** → **Instances** in the UI and launches the **Create Instance** wizard.



HPE Solutions with Cohesity DataProtect

HPE Solutions with Cohesity combines optimized HPE ProLiant Gen11 and HPE Alletra Storage servers with Cohesity software to deliver a multicloud, data platform. The solution includes a comprehensive range of data management services, available on-premises or from the cloud. HPE Solutions with Cohesity is designed with a flexible architecture, which allows easy expansion to additional use cases, further increasing operational simplicity and reducing TCO.

HPE Solutions with Cohesity uniquely empowers organizations to protect data and apps, detect cyber threats, backup and manage data, and recover rapidly at scale from an attack across dispersed IT environments while immediately increasing operational efficiency and giving visibility and analytics into all data.

VMs being managed by VM Essentials are protected with Cohesity DataProtect using an agent installed on the VM. The agent is downloaded from the Cohesity UI and manually installed on the VM. Alternatively, the agent installation can be simplified using whichever automation applications the customer already utilizes in large environments. The Cohesity DataProtect agent support the following operating systems: Windows, Linux, AIX, Solaris, and HP-UX.

Once the agent is installed on the VM, the IP address or network name is registered as a source in the Cohesity UI. Then, when all the required VM sources are registered, a Protection Group is created containing these VMs. When the Protection Group runs, the Cohesity agent-based backup runs on the VMs hosted on the VM Essentials cluster as if it were a physical server.

See Table 2 for an explanation of relevant Cohesity terminology.

Cohesity DataProtect supports backup & recovery, and data management of Oracle¹, Microsoft SQL Server¹, and NoSQL distributed databases including MongoDB¹, Cassandra, Couchbase DB, and Apache HBase.

The following are key terms within the Cohesity ecosystem:

Table 2. A glossary of key Cohesity terminology

DataProtect	An end-to-end backup and recovery solution that is fully integrated with Cohesity Data Cloud
Source	The source of the backup objects
Object	An item from a source that you add to a Protection Group
Protection Group	Defines the backup source, the objects from that source to backup, when to perform the backup, what Protection Policy to use, and other options such as QoS and source or server-side deduplication
Protection Policy	Defines the backup frequency, retention, replication/archival settings, as well as some other options (Database Log Backup, BMR Backup, Blackout Window, others)
Quality of Service (QoS)	A policy that determines which storage media (SSD or HDD) data is written to and the priority of I/O operations
Storage Domain	The logical entity for storing data, it defines the policy and frequency for deduplication, compression, encryption, quotas, erasure coding, replication factor, and cloud tiering

For more information on HPE Solutions with Cohesity, visit: Cohesity.com/HPE

¹Database workloads supported by VM Essentials

Conclusion

As part of the HPE Partner Product Engineering Program, HPE and Cohesity engineers completed backup and recovery testing of Cohesity DataProtect agents with VM Essentials VMs running Windows and Linux operating systems, and MS SQL Server database. The goal of testing was functional validation; scaling and performance were outside the scope of these tests.

The functional testing of Cohesity's agent-based data protection and recovery within an VM Essentials environment was completed successfully.

In conclusion, Cohesity DataProtect can be used effectively to protect VM Essentials VMs by utilizing Cohesity agents.

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