



**Hewlett Packard
Enterprise**

The Essentials: HPE VM Essentials Software (VME)

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HPE VM Essentials Software Introduction



Today's Realities Are Paralyzing Virtually Every Enterprise

Increasing costs

due to lock-in, forced bundling, and VM sprawl

Uncertain strategy

need to support current workloads and new runtimes

Leading to complexity

more apps, more formats, more places... same team

“I’m evaluating options, but it will take 2 years to deal with VMware while I also adjust our container strategy, figure out AI, and re-evaluate public cloud, Oh yeah... and I’m not getting any new people to help.”

Licensing Changes Have Caused Significant Disruption For Customers

- **Bundles only:** VCF, VVF, vSphere Standard
- **No more perpetual licenses**
- **No more ELAs**
- **Lower discounting**
- **Extra charges** (e.g., vSAN)

Effective price increase of

2-4x

for most customers*

Note: *Some customers experience effective price increases of 15x or more

Announcing **HPE VM Essentials** **Software**

- Reduce costs with HPE VM Essentials integrated hypervisor
- Simplify management across VMware and HPE clusters
- Future-proof IT with flexible consumption & upgrade paths
- Lower risk with enterprise-grade support & ecosystem

VME FAQ



VME FAQ

- **Is HPE building a new hypervisor?**

- No – we have created a virtualisation solution, leveraging technology from our recent Morpheus acquisition which contains a:
 - Proven KVM hypervisor
 - Highly available cluster architecture
 - On-premise management plane (KVM & VMW)
- Solution currently available as stand-alone software

- **What is supported on the stand-alone version?**

- VM Essentials software
- HPE ProLiant Gen10+ and Gen11 and Gen12
- Alletra 5K, 6K or HPE Alletra Storage MP B10000 for external storage
- HPE Simplivity (Q3 FY25)

- **Trial licenses**

- 60-day, 6-socket limited EVAL version of Morpheus VM Essentials is available. No direct support.
- Request your download at:
<https://www.hpe.com/us/en/hpe-vm-essentials/get-started.html>

- **Customer Licenses**

- Customers can download their software from the [HPE My Software Center](#) and install on their infrastructure

- **Selling Motion: Channel-Only for HPE Morpheus VM Essentials**

The term "Channel-Only" refers to a sales model in which all transactions for HPE VM Essentials Software will be conducted **exclusively** through an authorized HPE Partner.

Quick Solution FAQ

- **Can customers migrate existing workloads to HPE Morpheus VM Essentials?**

Yes - VM Essentials has the ability to convert individual VMs from a VMware format to a native KVM format. For larger scale migrations, an offering from Zerto is being developed, along with professional services to help customers move workloads onto VM Essentials. The conversion tool is offline and will require some downtime to reformat the VMs.

- **Can customers run VMware and HPE Morpheus VM Essentials together?**

VM Essentials and VMWare will have to run on their own dedicated servers but can leverage the same HPE Alletra Storage MP B10000 storage array and be managed through the same on-premises VM Essentials manager console. Standalone version of VM Essentials and VMWare vSphere can also be managed through the same on-premises console.

- **What key features and functionalities will HPE Morpheus VM Essentials support at launch?**

At launch, VM Essentials Software will have a rich feature set, comparable to that of **VMware vSphere Standard edition**, but with **additional functionality normally only found in higher VMware subscription levels**.

The standalone version of VM Essentials, will require customers to download the software from **HPE My Software Center** and install on their infrastructure.

NEW: HPE VM Essentials Software To Unify VMware & HPE VME Hypervisor

- **Reduce costs with HPE VM Essentials integrated hypervisor**

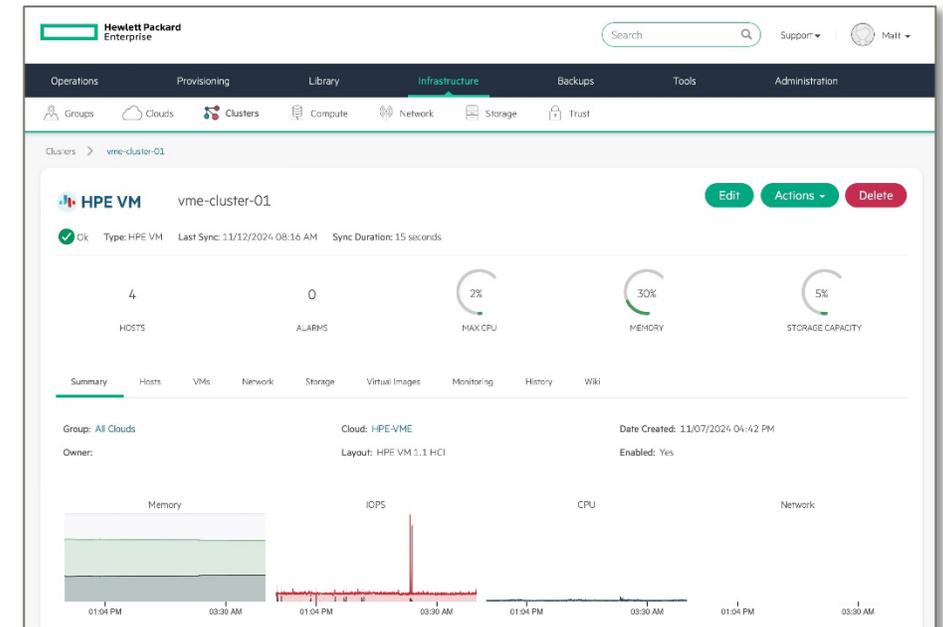
Featuring core capabilities to diversity VM estates including storage optionality (local, NFS, iSCSI, Fibre Channel), distributed workload placement, VM HA and live migration, data protection via snapshots and native backup, and DR with Zerto*

- **Simplify management across VMware and HPE**

Connect existing VMware® clusters for management and VM-vending into ESXi and HPE VME hypervisor from one interface. Also includes IPAM and DNS integration, automation execution, secrets management, and VMware to KVM image conversion

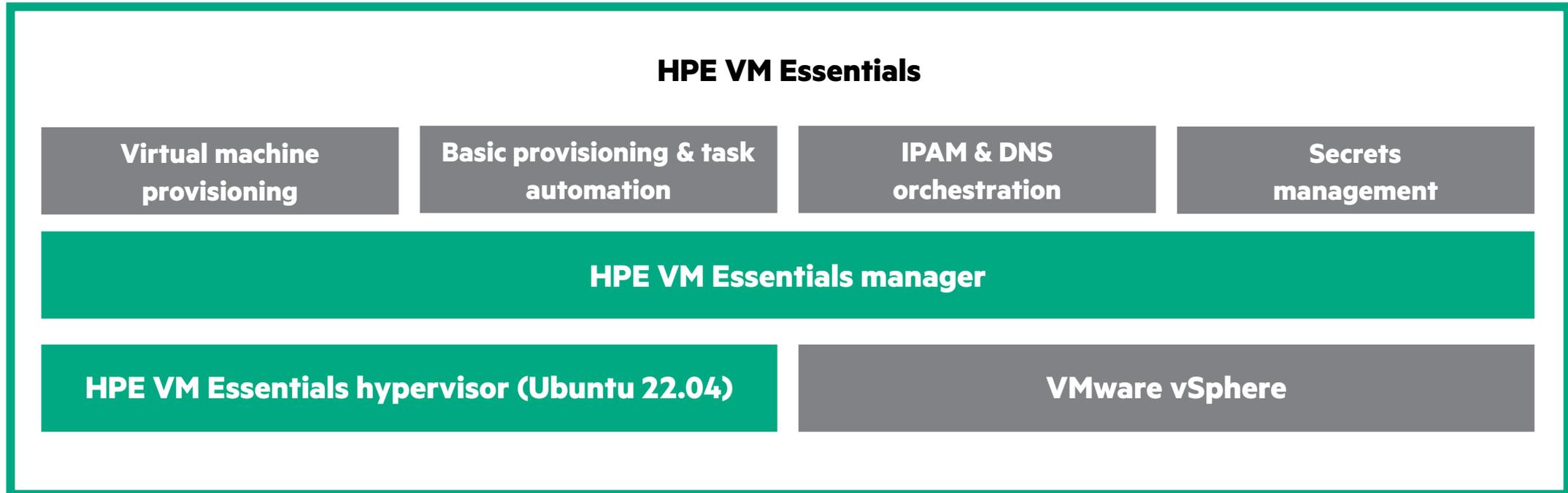
- **Lower risk with enterprise-grade support & ecosystem**

Building on a proven KVM core, HPE VM Essentials includes HPE's enterprise-class global support. HPE is working with its ecosystem of ISVs to expand HPE VME hypervisor certification and support for Data Protection, VDI, ERP, etc.

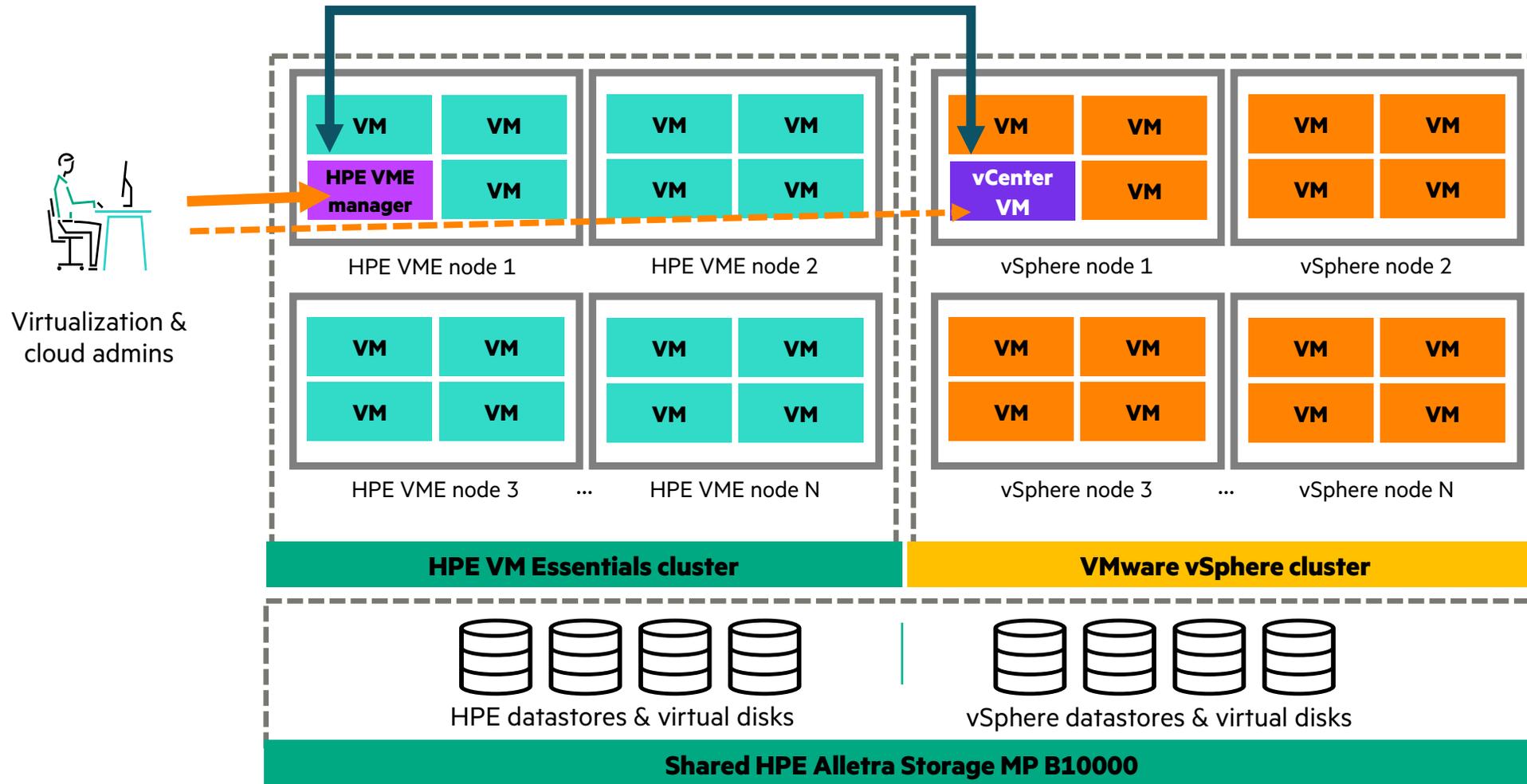


* Zerto integration with HPE VM Essentials on roadmap for 1H 2025

Solution Overview



HPE VM Essentials



HPE VME Licensing: Socket-based, not Cores

HPE Tech Care Essentials included with license



Architecture



Theory Of Operation - Logical Architecture

- **Manager deployment:**

- HPE VM Essentials manager runs on a single node

- **Local storage deployment:**

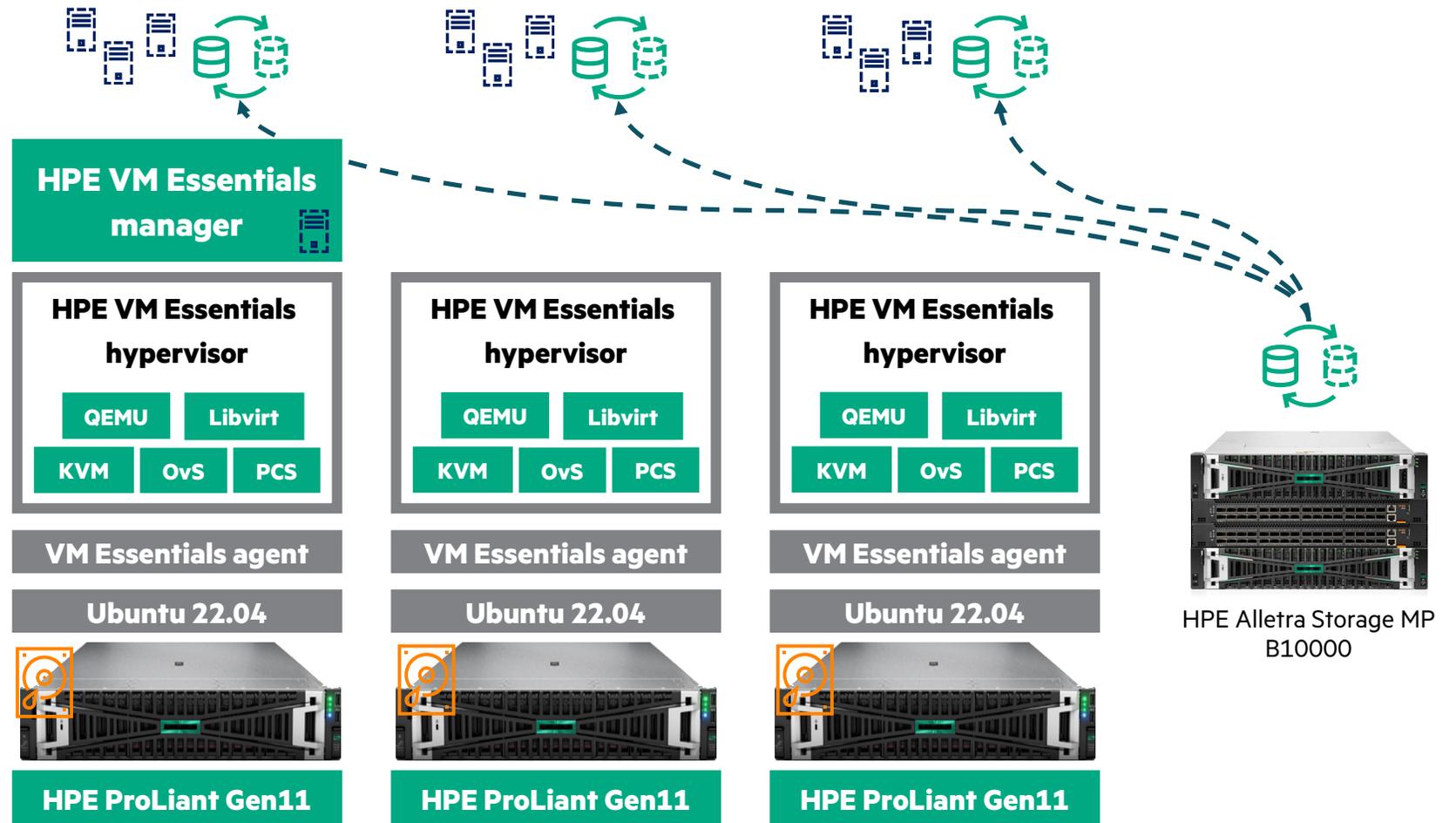
- OS, VM Essentials agent, and VME hypervisor elements operate from local storage

- **VM hosting:**

- VMs can be hosted on:
 - Local datastores
 - Shared datastores

- **Storage types:**

- **Local storage:**
 - Local disk directory pool
- **Converged storage:**
 - Uses CEPH
- **Shared storage:**
 - Supported via NFS, iSCSI, or FC
- **Enhanced storage integration:**
 - Optimized with HPE Alletra Storage MP B10000



Requirements



Pre-Requisites

Prior to installing HPE VM Essentials:

- Install Ubuntu 22.04 on each host of the cluster
- Patch the Ubuntu OS
- Required: install the hardware enablement version of the kernel

Configure host networking

- Set static management IP:
 - Recommended: configure more than one interface in bonded network interface, e.g. bond0
- DNS, NTP, proxy

Configure any storage networking

Configure HPE VM Essentials management VM hostname in DNS

Minimum node count:

- Local storage or NFS: 1 node
- CEPH, iSCSI, FC: 3 nodes



HPE Alletra Storage MP B10000 Integration

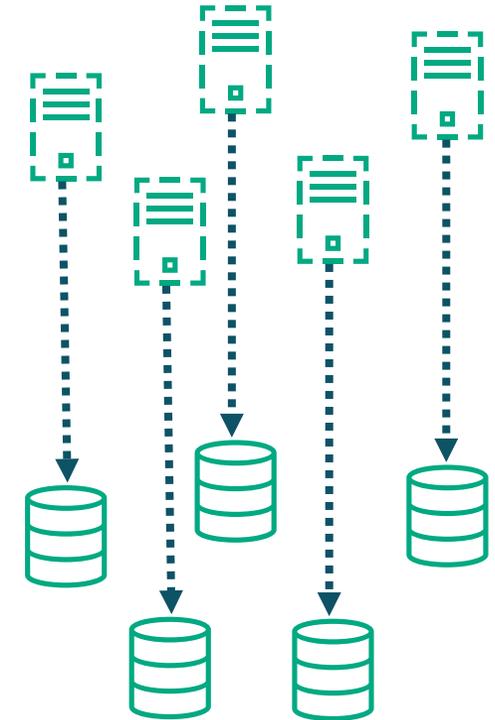
- HPE VM Essentials supports native integration with HPE Alletra Storage MP B10000
- Storage interaction enabled by storage plugin
 - VM granular storage management
 - Each VM is mapped to its own dedicate volume
 - Enables VM-native granular volume snapshots and storage management
 - VM granular replication



HPE ProLiant Gen 11



HPE Alletra Storage MP B10000



Storage Overview

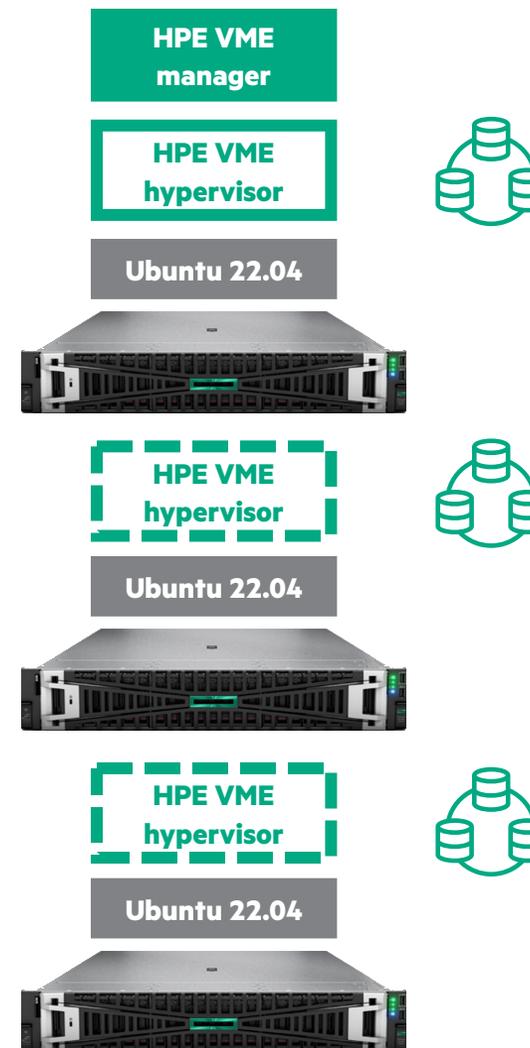
- Datastores are storage for virtual machines and optionally also virtual images (ISOs, QCOW2¹, VMDK², etc.)
- There are **3 type of datastores** supported for hosting VMs and images:
 - 1. DIRECTORY POOL:**
 - Comprised of local storage on each server
 - The same directory path must exist on each node
 - 2. NFS:**
 - All nodes must have access to the share
 - 3. GFS2:**
 - iSCSI and FC supported
 - Clustered file system orchestrated by the *pacemaker* cluster service
 - Presented volumes must show with the same name on each host

ADD DATA STORE

NAME: New Data Store

TYPE: Select

- Select
- Directory Pool
- NFS Pool
- GFS2 Pool (Global File System 2)



¹QCOW2 is a disk image file format used by QEMU virtualisation software. “QEMU Copy-on-Write version2”

²VMDK is a Virtual Machine Disk

HPE VM Essentials – Networking Overview

1. Management network

- The network used for managing the HPE VME hypervisor hosts

2. Compute network

- The network used for VM traffic

3. Storage network

- The network used to interact with external storage, such as NFS, iSCSI, FC

Note:

- Best practice is to have Compute and Management networks separate
- It is possible to deploy a cluster without a dedicated Compute network, running VM traffic over the Management network

The screenshot shows the HPE VM management interface for a cluster named 'hpecluster01'. At the top, there are buttons for 'Edit', 'Actions', and 'Delete'. Below this, a status bar indicates 'Ok' and 'Type: HPE VM' with a last sync time of '11/12/2024 09:06 AM' and a sync duration of '2 seconds'. A dashboard section shows five circular progress indicators: 'HOSTS' (1), 'ALARMS' (0), 'MAX CPU' (1%), 'MEMORY' (3%), and 'STORAGE CAPACITY' (0%). Below the dashboard is a navigation menu with tabs for 'Summary', 'Hosts', 'VMs', 'Network', 'Storage', 'Virtual Images', 'Monitoring', 'History', and 'Wiki'. The 'Network' tab is active, showing a sub-menu with 'Networks' and 'Routers'. A search bar and a '+ Add' button are visible. The main content area displays a table of network configurations:

STATUS	NAME	LABELS	IPV4 CIDR	POOL	DHCP	
✓	Compute				✓	✎ 🗑️
✓	Management		10.0.0.10/24		✓	✎ 🗑️

VMware Integration Overview

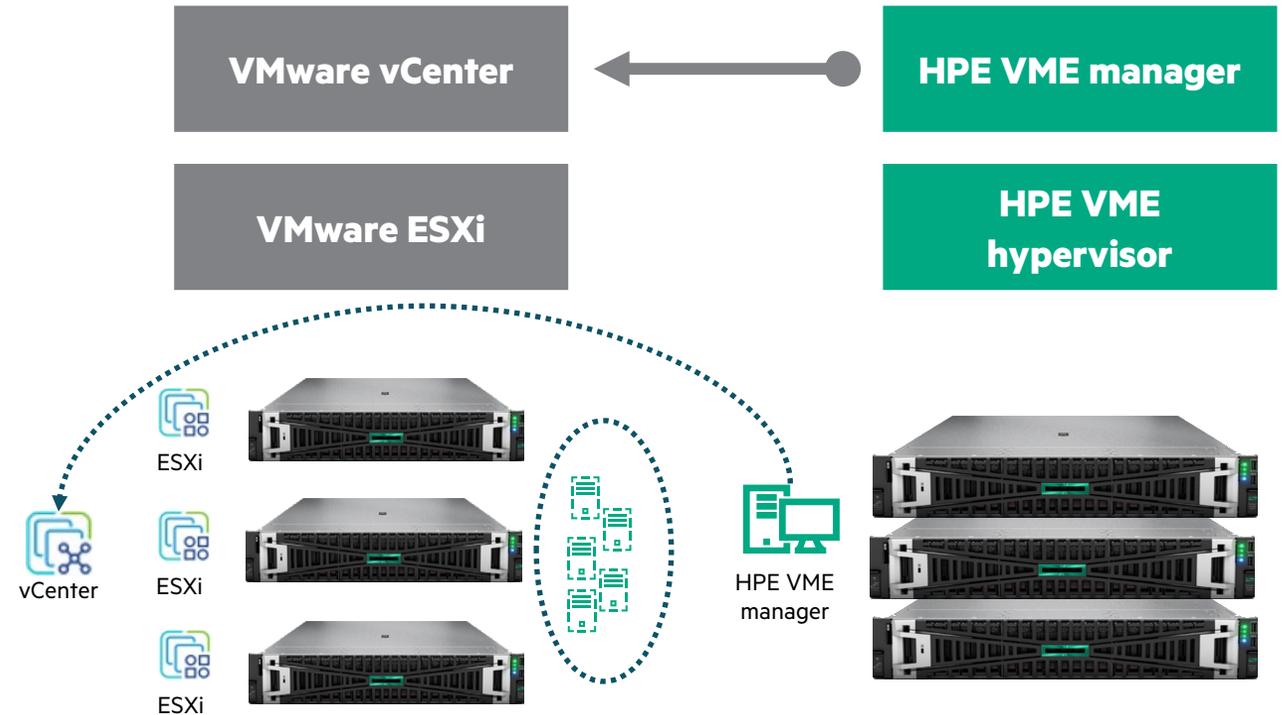
Enables management of existing vSphere® clusters or datacenters through the VME UI

- **Integration functionality:**

- Existing VM discovery and management
- New VM provisioning and management

- **Cloud sync:**

- The VMware integration performs a synchronization to collect information about the following resources every 5 minutes:
 - Networks
 - Datastores
 - VM Templates
 - Virtual Machines
 - Resource Pools
 - Folders



VMware Integration

- The vSphere environment will show as a new cloud in **Infrastructure -> Clouds**
- Once added, access to vSphere networks and datastores can be modified

The screenshot displays the Hewlett Packard Enterprise Infrastructure management console. The top navigation bar includes 'Operations', 'Provisioning', 'Library', 'Infrastructure' (highlighted), 'Backups', 'Tools', and 'Administration'. Below this, a secondary navigation bar shows 'Groups', 'Clouds', 'Clusters', 'Compute', 'Network', 'Storage', and 'Trust'. The main content area features two donut charts: 'Cloud Types' showing 2 items (Private Cloud and VMware vCenter) and 'Cloud Workloads' showing 18 items (RTP-VME-Cld and RTP-AFA171-VMW). Below the charts is a 'CLOUDS' section with a search bar, filters, and a table listing cloud instances.

TYPE	NAME	LABELS	HOSTS	VMS	BARE METAL	STATUS	
vmware	RTP-AFA171-VMW		3	10	0	OK	
MORPHEUS	RTP-VME-Cld		3	17	0	OK	

Cloud = Collection of Hardware Virtual Machine (HVM) Clusters or an integration of VMW vCenter appliance



VMware Integration

- If the option to **inventory existing virtual machines** was selected, the VMs in the selected vSphere resources will show as **Discovered**
- To manage a discovered VM through the VME manager UI, select the VM or VMs and select **Convert to Managed** from **Actions**

The screenshot displays the VME manager interface under the 'Infrastructure' tab. At the top, there are navigation tabs for Operations, Provisioning, Library, Infrastructure, Backups, Tools, and Administration. Below these are icons for Groups, Clouds, Clusters, Compute, Network, Storage, and Trust. A summary section shows 0 Container Hosts, 3 Hypervisors, 0 Bare Metal, 10 Virtual Machines, and 7 Discovered. The 'VMs' tab is selected, showing a table of discovered VMs. An 'Actions' dropdown menu is open over the table, with 'Convert to Managed' highlighted. The table columns include checkboxes, Power, OS, Name, Type, Host, Cloud, IP Address, Memory, Storage, and Status.

	POWER	OS	NAME	TYPE	HOST	CLOUD	IP ADDRESS	MEMORY	STORAGE	STATUS		
<input type="checkbox"/>	⏻	🔥	DE-LocalTest	🖥️	10.234	RTP-AFA171-VMW		0	0	✅		
<input type="checkbox"/>	⏻	🔥	DE-TestVM-202408291036	🖥️	10.234	RTP-AFA171-VMW		0	0	✅		
<input type="checkbox"/>	🔌	🔥	DE-TestVM-202408291043	🖥️	10.234	RTP-AFA171-VMW	Address 10.234.:	1	100	5	0	❌
<input type="checkbox"/>	🔌	🇺🇸	DEVVMWTest	🖥️	10.234	RTP-AFA171-VMW	Address 10.234.:	1	0	8	0	✅
<input type="checkbox"/>	⏻	🇺🇸	PCBE-Win16-Dev	🖥️	10.234	RTP-AFA171-VMW		0	0	0	0	✅
<input checked="" type="checkbox"/>	🔌	🔥	testdiscvoerwh	🖥️	10.234	RTP-AFA171-VMW	Address 10.234.:	0	0	2	0	✅

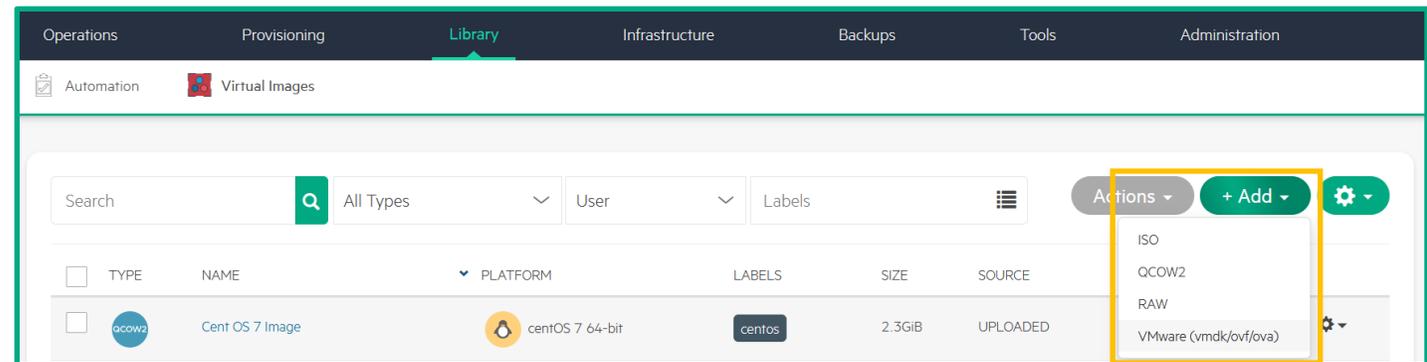
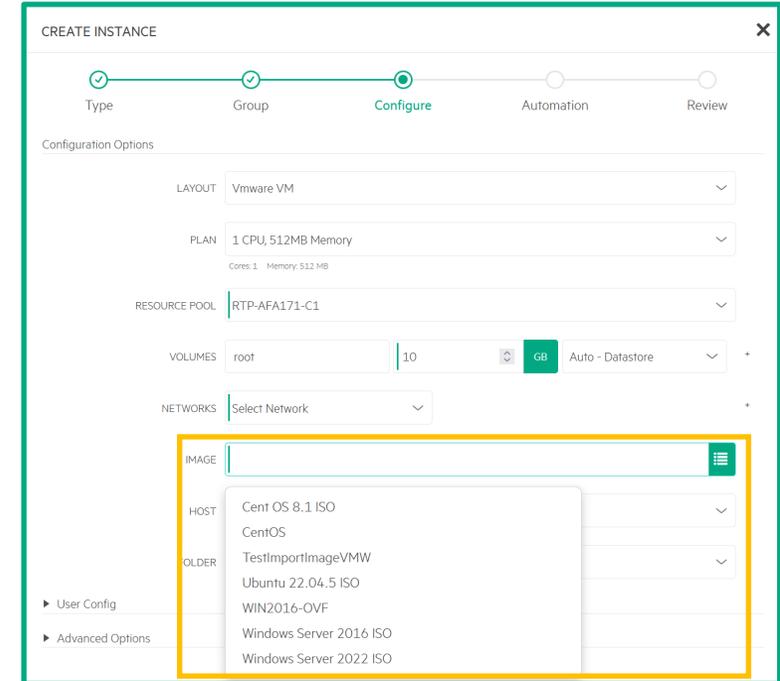
VMware Integration – VM Provisioning

VMware VMs can be deployed from:

1. vSphere Content Libraries
2. VM Essentials **Virtual Images** library

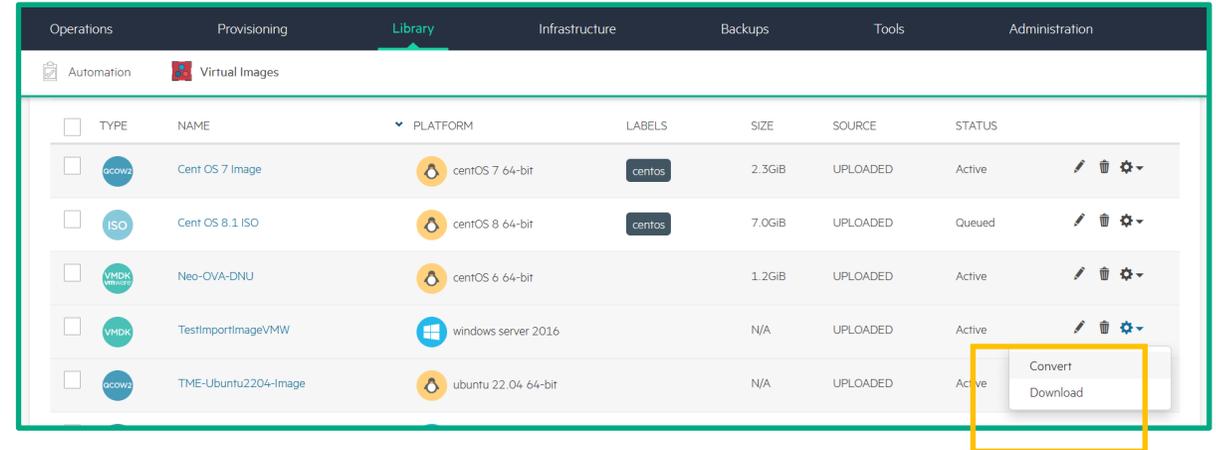
VMware-compatible image types:

1. ISO – for installing VM OS upon VM deployment
2. VMDK – standard VMware virtual disk format
3. OVA / OVF – open standard format for VMs



VMware to VM Essentials Image Conversion

- Built into VME is the capability to convert VMware virtual machine images that are in the VME Virtual Image library to QCOW2 images
- This allows conversion of VMware assets into VME-compatible assets
- NOTE: when deploying Windows VMs, ensure that the **virtio drivers** option is selected, to ensure proper function of VM disks and networking



TYPE	NAME	PLATFORM	LABELS	SIZE	SOURCE	STATUS	
QCOW2	Cent OS 7 Image	centOS 7 64-bit	centos	2.3GiB	UPLOADED	Active	
ISO	Cent OS 8.1 ISO	centOS 8 64-bit	centos	7.0GiB	UPLOADED	Queued	
VMDK	Neo-OVA-DNU	centOS 6 64-bit		1.2GiB	UPLOADED	Active	
VMDK	TestImportImageVMW	windows server 2016		N/A	UPLOADED	Active	
QCOW2	TME-Ubuntu2204-Image	ubuntu 22.04 64-bit		N/A	UPLOADED	Active	

Context menu for 'TestImportImageVMW':
Convert
Download

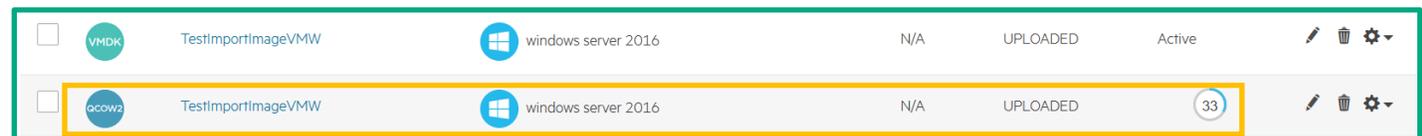
CONVERT IMAGE?

What would you like to convert this image to?

FORMAT: QCOW2

BUCKET:

NAME: Image Name (optional)



VMDK	TestImportImageVMW	windows server 2016		N/A	UPLOADED	Active	
QCOW2	TestImportImageVMW	windows server 2016		N/A	UPLOADED	33	

Guest OS Support

- **KVM does not support all guest OS's outside of Linux, while VMware does**

KVM supports hardware-assisted virtualization for a wide variety of guest operating systems including

- BSD,
- Solaris,
- Windows,
- Haiku,
- ReactOS,
- Plan 9,
- AROS,
- macOS,
- and even other Linux systems.
- HPE Morpheus VM Essentials plans to support most of the guest operating systems.



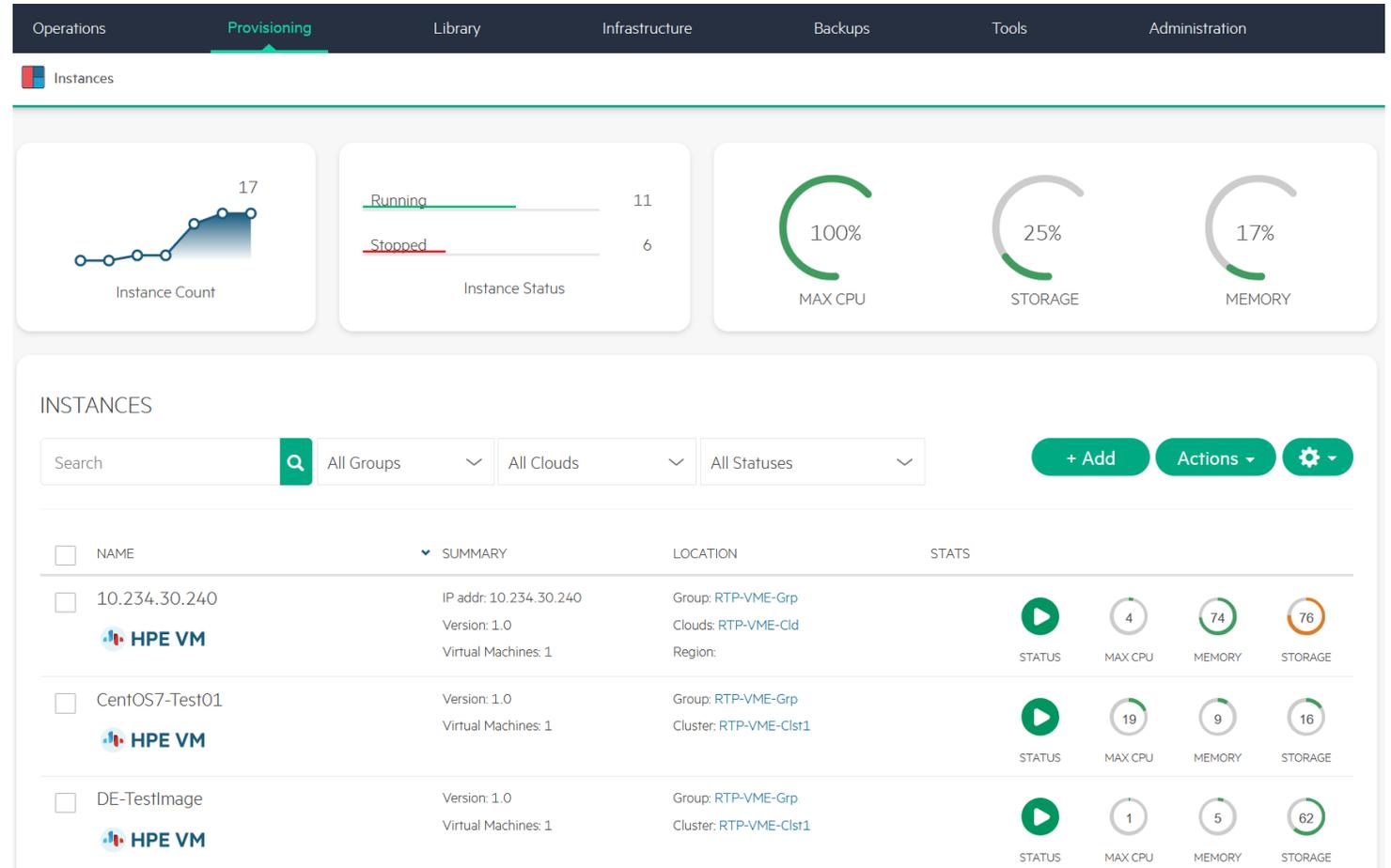
https://www.youtube.com/watch?v=TH5_-BxA68o

Virtual Machine Management



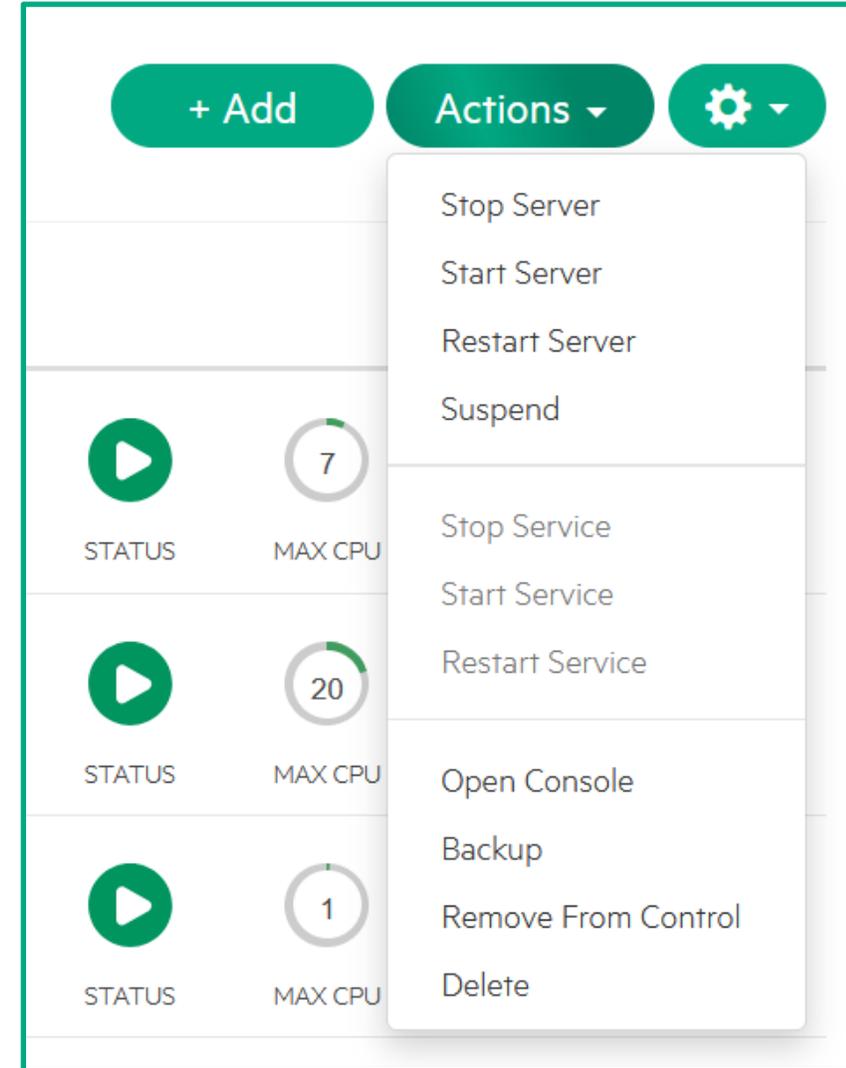
Virtual Machine Management

- Primary dashboard for VM management is Provisioning -> Instances
- An instance is not a VM, but contains one or more VMs that would correlate to a single horizontally scalable entity
- The VMs within an instance will be deployed from the same image
- Actions can be performed at the instance or individual VM level



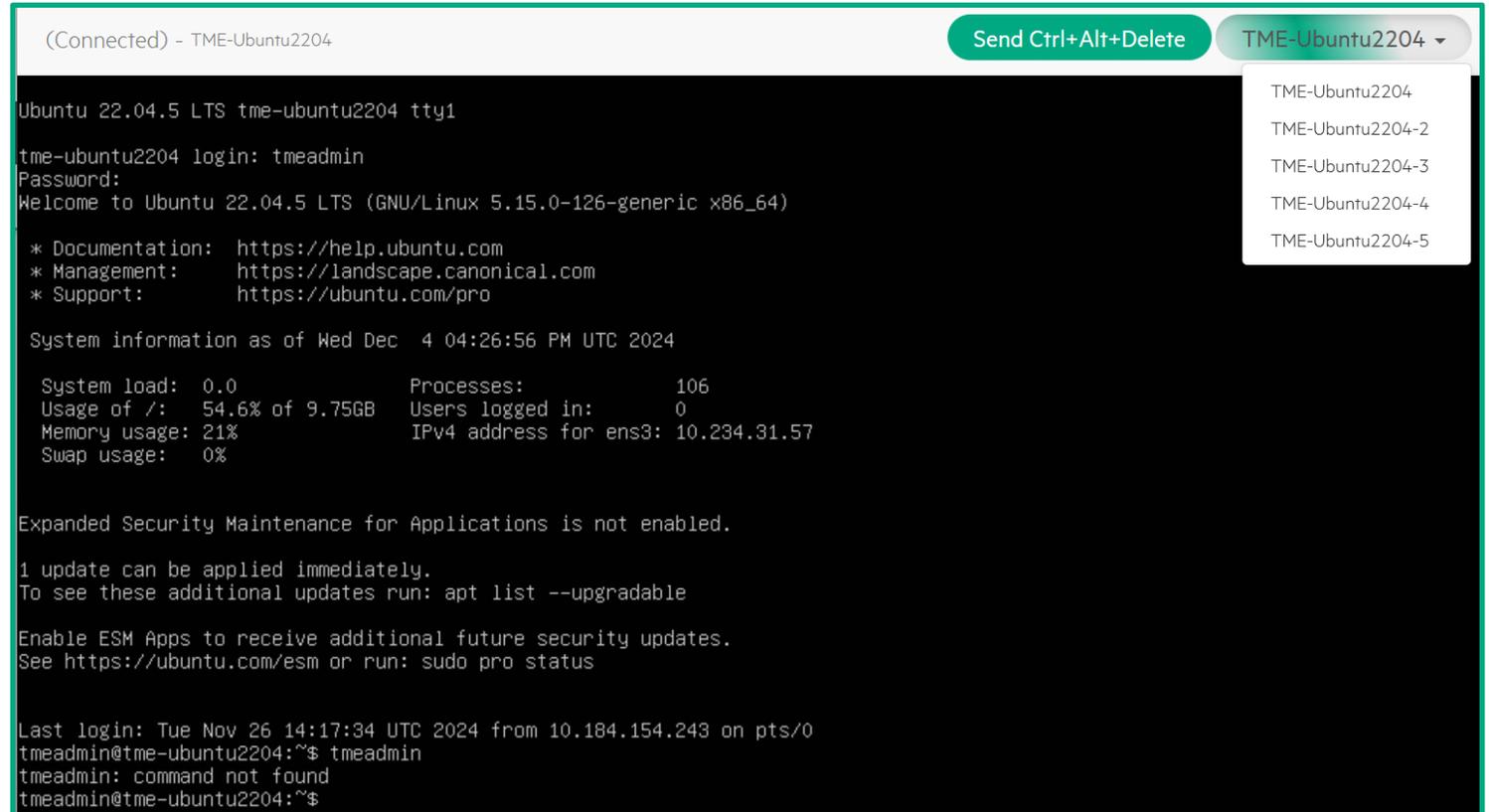
Instance Main Page Actions

- From the main Provisioning -> Instance page, actions can be performed against one or more instances
- Actions performed against the instance are performed on any virtual machines associated with the instance:
 - Power operations
 - Open console
 - Backup initiation
 - Deletion
- Open Console performed at the Instance level will open a console to the first VM by default



Instance-level Console Behavior

- If the console is opened at the instance level, by default, the first VM listed is connected
- The specific VM can be selected in the upper right drop down
- VMs can also be accessed via typical SSH / RDP methods



```
(Connected) - TME-Ubuntu2204
Send Ctrl+Alt+Delete
TME-Ubuntu2204
TME-Ubuntu2204-2
TME-Ubuntu2204-3
TME-Ubuntu2204-4
TME-Ubuntu2204-5

Ubuntu 22.04.5 LTS tme-ubuntu2204 tty1
tme-ubuntu2204 login: tmeadmin
Password:
Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 5.15.0-126-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:   https://landscape.canonical.com
 * Support:      https://ubuntu.com/pro

System information as of Wed Dec  4 04:26:56 PM UTC 2024

System load:  0.0          Processes:      106
Usage of /:   54.6% of 9.75GB  Users logged in:  0
Memory usage: 21%          IPv4 address for ens3: 10.234.31.57
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

1 update can be applied immediately.
To see these additional updates run: apt list --upgradable

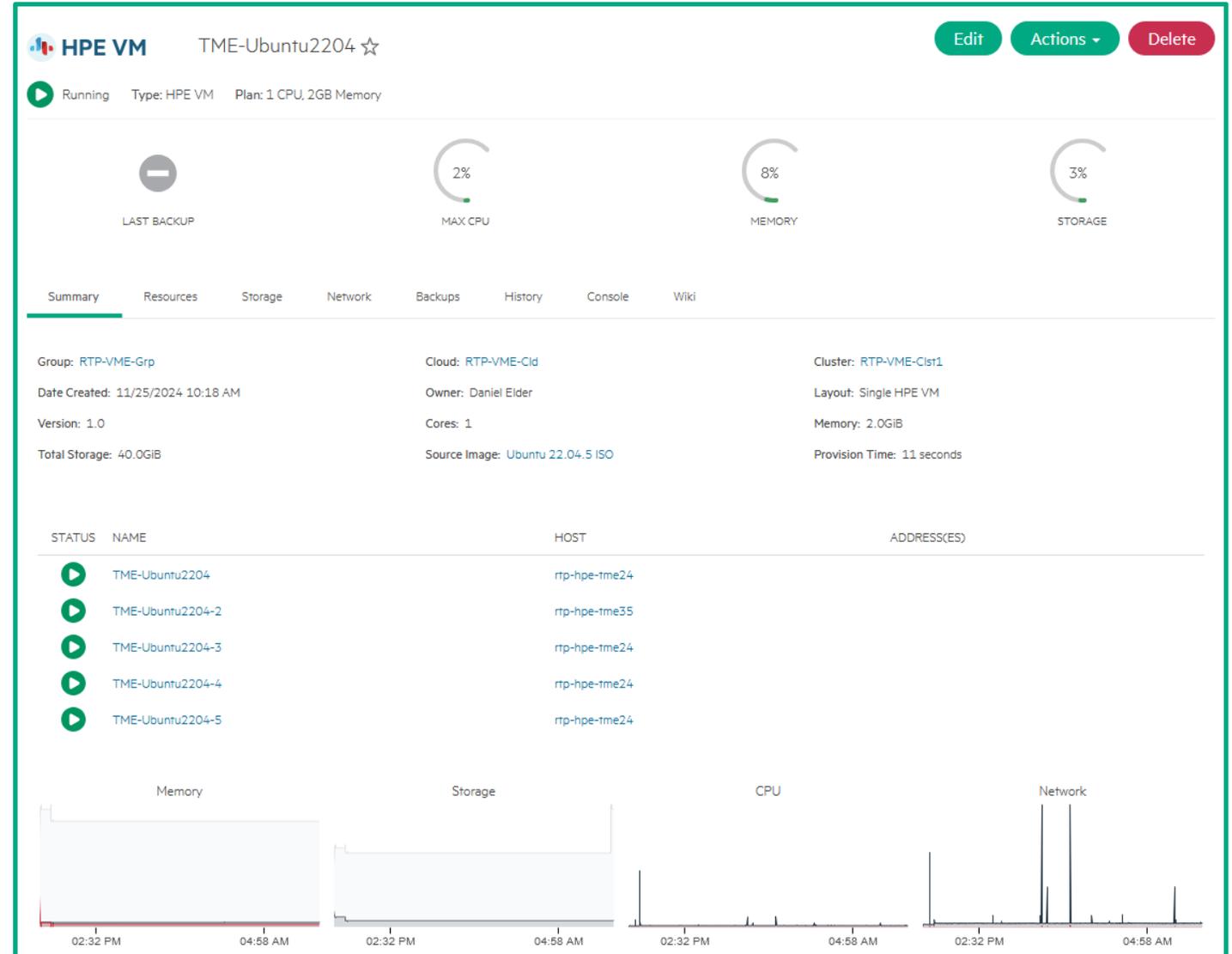
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Last login: Tue Nov 26 14:17:34 UTC 2024 from 10.184.154.243 on pts/0
tmeadmin@tme-ubuntu2204:~$ tmeadmin
tmeadmin: command not found
tmeadmin@tme-ubuntu2204:~$
```



Instance Internal Dashboard

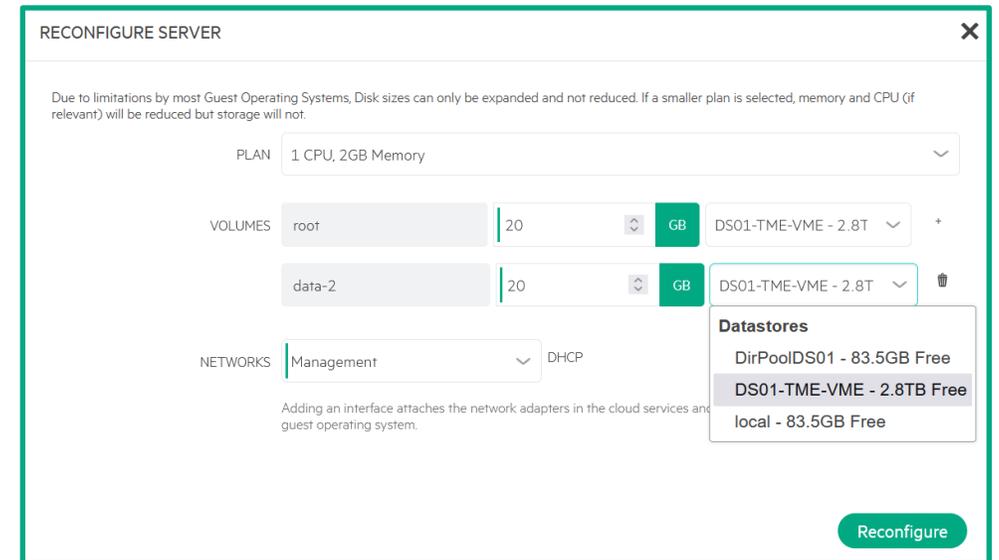
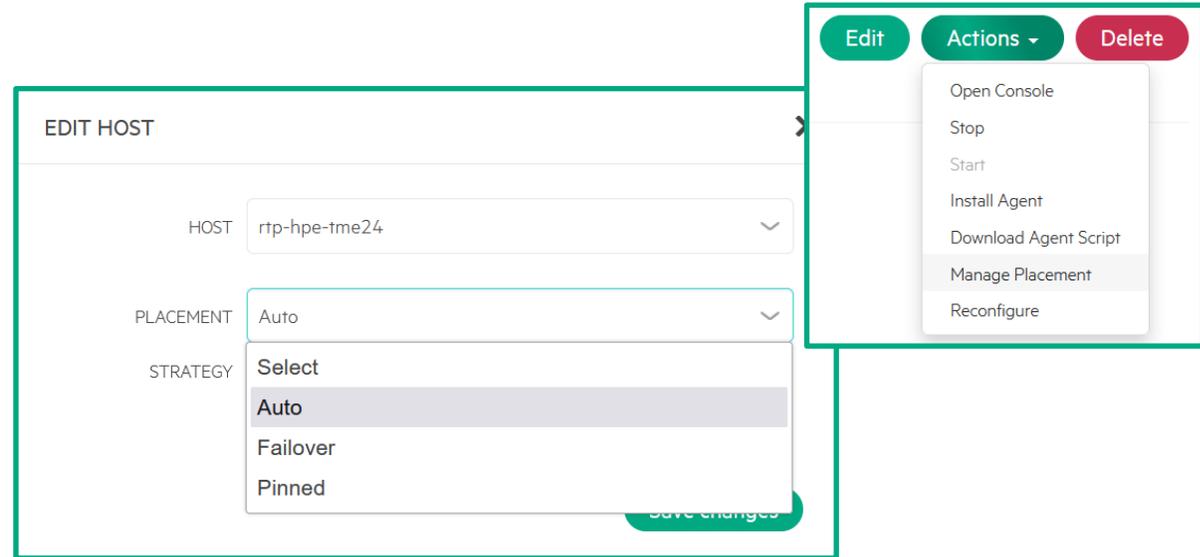
- Displays configuration and usage information of the instance:
 - CPU, memory, and storage utilization
 - Backup status
 - Summary
 - Resources – VMs running in instance
 - Storage – VM disks
 - Network – VM network interfaces
 - Backups – VM backups and snapshots
 - History – actions performed on the instance or VMs
 - Console
 - Wiki



VM Placement And Migration

- When a VM is deployed, a host can be explicitly defined or left to VME manager to determine best placement
- Compute placement can be modified through the Manage Placement action
- The host the VM is running on can be changed by selecting a new host in the drop down
- Placement strategy defines how placement is handled:
 - Auto – VME will automatically migrate VM based on host workload or host failure
 - Failover – VM will remain on selected host until a host failure
 - Pinned – VM remains on selected host and will not migrate
- The datastore where the VM resides can be changed through the Reconfigure action and can be selected at the individual volume:
 - Changing this will migrate the data from one datastore to another

Note that for proper failover handling and resiliency, the VMs should be on shared storage



https://www.youtube.com/watch?v=JnUdM_-Xxvc

Features Comparison



HPE VM Essentials Solution Features

Multi-hypervisor support

HPE VM Essentials enables simple provisioning and management of HPE VM Essentials and VMware virtual machines

Centralized identity & single sign-on (SSO)

Enables external user authentication using Active Directory (AD) or LDAP. Optional SSO with Okta, OneLogin, Azure AD, or other SAML-enabled providers

IPAM integration

Integrate with external IP address management providers (Infoblox, phpIPAM, BlueCat) to automate the reservation of an IP address for the VM during the provisioning process

DNS integration

Integrate with external DNS providers (Infoblox, Microsoft DNS, BlueCat) to automate the creation of DNS records for a VM during the provisioning process

Provisioning automation

Execute Bash or PowerShell scripts during VM provisioning, to automate system bootstrapping operations

Day 2 automation

HPE VM Essentials supports the execution of Bash and PowerShell scripts on provisioned and discovered VMs

Secrets management

Securely store and retrieve secrets from the native secrets manager for use with the solution's task automation feature

HTML 5 virtual machine console

Access the dashboard of HPE VM Essentials and VMware virtual machines via the HTML 5 console



HPE VM Essentials Hypervisor Features

HPE-validated hardware

The HPE VM Essentials hypervisor will be validated on HPE servers to deliver an optimal experience and provide hardware compatibility assurance

VM live migration

Migrate a running HPE VM Essentials virtual machine from one host to another within the same cluster with zero downtime

VM high availability

Automatically restart HPE VM Essentials virtual machines on another host in the same cluster in the event of an unexpected host failure within the cluster

Dynamic workload scheduler

Dynamically schedule the placement of HPE VM Essentials virtual machines within a cluster, based upon optimal workload distribution across the cluster

Storage migration

Migrate the virtual disks of a running HPE VM Essentials virtual machine from one storage datastore to another with zero downtime

VMware VM conversion

Convert existing VMware virtual machines to the HPE VM Essentials hypervisor using the native conversion feature within the HPE VM Essentials solution



HPE VM Essentials Hypervisor Features

Virtual machine snapshots

Create and revert snapshots for HPE VM Essentials virtual machines

Native data protection

Backup and restore HPE VM Essentials virtual machines using the solution's native data protection feature

External storage support

The HPE VM Essentials hypervisor supports running virtual machines on external storage via iSCSI, NFS, and Fibre Channel

HPE Alletra Storage MP integration

HPE VM Essentials includes an integration with the HPE Alletra Storage MP B10000 storage array, that enables HPE VM Essentials virtual machines to natively reference the Alletra MP storage for their storage (1:1 VM-to-disk mapping)

HPE Alletra Storage MP array-based snapshots

The Alletra MP storage integration provides the ability to create and revert array-based snapshots for HPE VM Essentials virtual machines through the HPE VM Essentials UI



Features Comparison

Feature	vSphere Standard	vSphere Enterprise Plus	vSphere Foundation	HPE VM Essentials
Life Cycle Management	Yes	Yes	Yes	Yes - HPE Private Cloud Business Edition
Content Library	Yes	Yes	Yes	Yes
Distributed Switch	No	Yes	Yes	Yes
Virtual Volume	Yes	Yes	Yes	Yes, w/ HPE Alletra Storage MP B10000
Identity Federation	Yes	Yes	Yes	Yes
TLS 1.2 and 1.3	Yes	Yes	Yes	Yes
TPM 2.0	Yes	Yes	Yes	No
Virtual TPM	Yes	Yes	Yes	No
VM encryption	Yes	Yes	Yes	Yes, w/ HPE Alletra Storage MP B10000
SSO and Identity Broker	No	No	Yes	Yes
Key Provider	Yes	Yes	Yes	No
vSMP	Yes	Yes	Yes	Yes
HA	Yes	Yes	Yes	Yes
FT	Yes	Yes	Yes	No

This is not intended to be an exhaustive feature comparison.

The features discussed are a comparison of equivalent features. The exact implementation of the features can vary between the products.

For most current features, refer to HPE VM Essentials Quickspecs and release notes

Features Comparison

Feature	vSphere Standard	vSphere Enterprise Plus	vSphere Foundation	HPE VM Essentials
Distributed Resource Scheduler	No	Yes	Yes	Yes
Storage DRS	No	Yes	Yes	No
Distributed Power Management	No	Yes	Yes	No
Storage Policy-based Management	Yes	Yes	Yes	No
SR-IOV	No	Yes	Yes	No
vMotion	Yes	Yes	Yes	Yes
Storage vMotion	Yes	Yes	Yes	Yes
vSphere Replication	Yes	Yes	Yes	Yes, w/ HPE Alletra Storage MP B10000
Support for 4K Native Storage	Yes	Yes	Yes	Yes
vCenter HA (auto-restart)	Yes	Yes	Yes	Yes
vCenter Backup and Restore	Yes	Yes	Yes	Yes
IPAM integration	Yes	Yes	Yes	Yes
DNS integration	Yes	Yes	Yes	Yes
MetroCluster	No	Yes	Yes	No

This is not intended to be an exhaustive feature comparison.

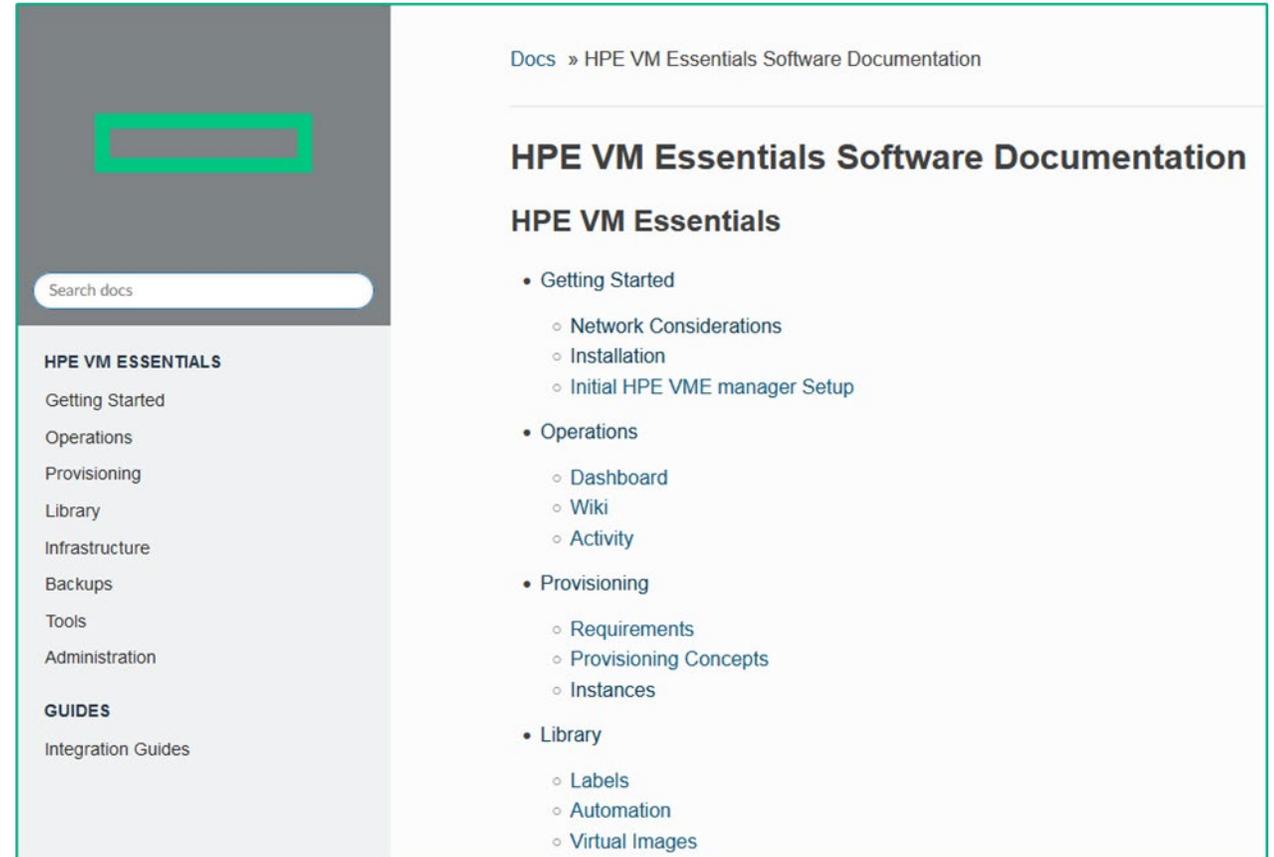
The features discussed are a comparison of equivalent features. The exact implementation of the features can vary between the products.

For most current features, refer to HPE VM Essentials Quickspecs and release notes

https://www.youtube.com/watch?v=BdeOek_A0kU

Resources

- [HPE VM Essentials Software documentation](#)
- [FAQ - HPE VM Essentials Software](#)
- [Solution brief - HPE VM Essentials Software and hybrid cloud operations powered by Morpheus](#)
- [Customer presentation - HPE VM Essentials](#)
- [Competitive positioning - HPE VM Essentials competitive battlecard](#)
- [Video - HPE VM Essentials product demo](#)
- [Video - HPE VM Essentials customer value proposition](#)
- [Reference Architecture – VME](#)
- [Primary product documentation](#)
- [VME Blog](#)
- [Quick Specs Guide](#)



Docs » HPE VM Essentials Software Documentation

HPE VM Essentials Software Documentation

HPE VM Essentials

- Getting Started
 - Network Considerations
 - Installation
 - Initial HPE VME manager Setup
- Operations
 - Dashboard
 - Wiki
 - Activity
- Provisioning
 - Requirements
 - Provisioning Concepts
 - Instances
- Library
 - Labels
 - Automation
 - Virtual Images

HPE VM ESSENTIALS

- Getting Started
- Operations
- Provisioning
- Library
- Infrastructure
- Backups
- Tools
- Administration

GUIDES

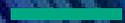
- Integration Guides



Hewlett Packard
Enterprise

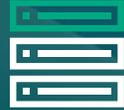
HPE Compute Ops Management

Transforming compute management
across distributed environments



What Challenges Are Keeping You Working Nights And Weekends?

Infrastructure & Security



Downtime due to server issues

59.7%

Inability to remotely access servers

50.4%

Inability to update firmware and security patches quickly

41.2%

Efficiency & Time to Market



Time-consuming and expensive process to get staff to edge locations

57.5%

Server issues delaying development and deployment of new apps

46.5%

Resources & Budget



Limited IT resources (time, money)

58.8%

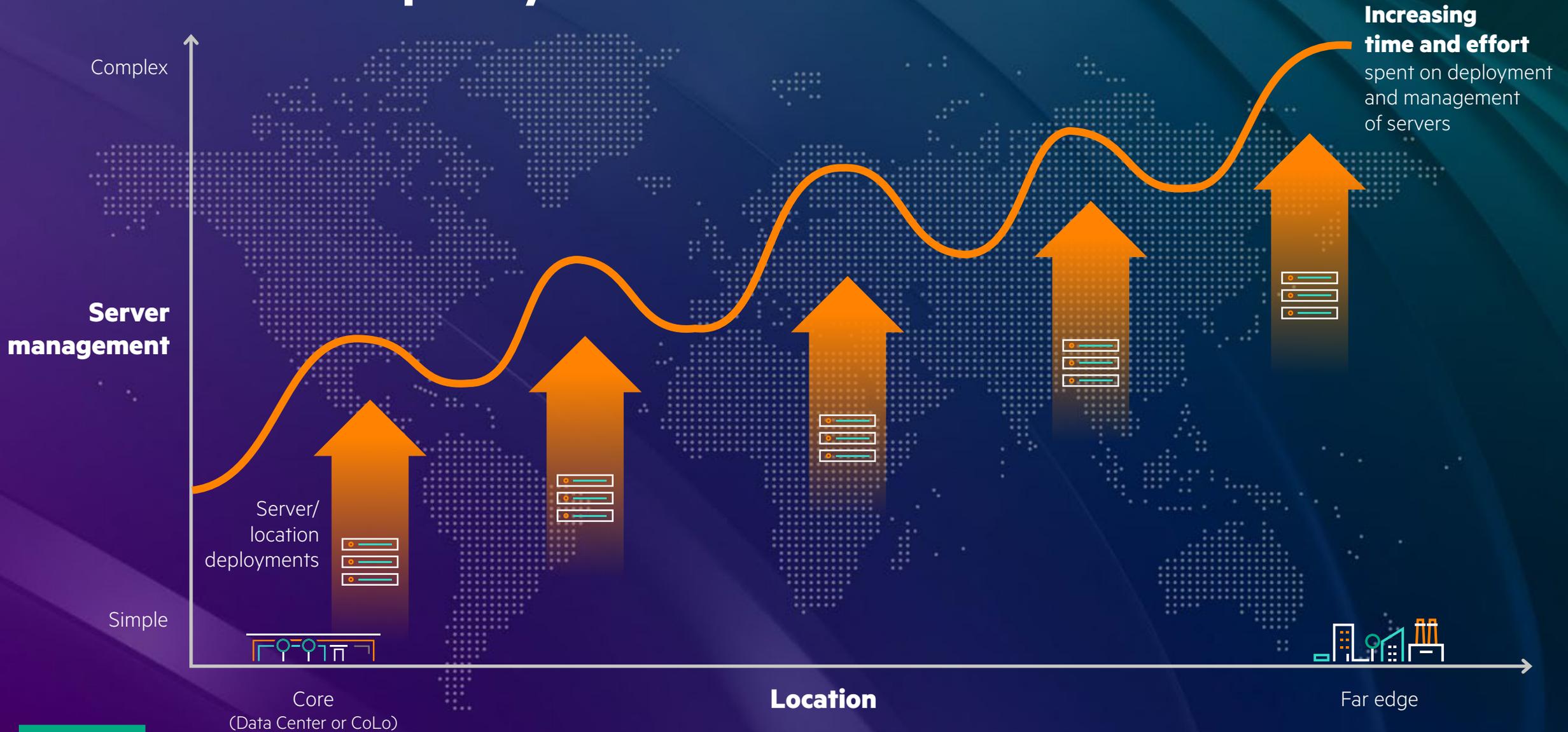
Difficult to budget for scale and growth

47.8%

Lack of centralized tool for management

32.3%

Complexity Grows As Your Environment Does



Managing Your Compute Environment



No matter where your compute lives...Manage everywhere from anywhere!



HPE Compute Ops Management

Cloud-based compute management for the distributed enterprise

Secure

server access, monitoring, and management reduces exposure to security risks and compliance issues

Automate

tasks for efficiency, reduce manual effort in deployment, and achieve seamless, simplified management

Up to **75%**
less time spent managing servers²

Up to **4.8 hours**
less downtime per server per year²

Up to **\$152K**
travel and software costs saved over 3 years²

² A commissioned study conducted by Forrester Research, New Technology: The Projected Total Economic Impact™ of HPE Compute Ops Management, June 2024. Results are for a composite organization.

<https://www.youtube.com/watch?v=HNk0oDt2B4A>

Secure

Gain an intuitive management experience for your infrastructure without sacrificing data privacy

Secure connectivity, end-to-end

Experience secure authentication from the cloud platform to the individual server level with data encryption

Improved risk management

Visibility of security status and granular control over iLO security settings and configurations empowers you to prioritize risks

Centralized security management

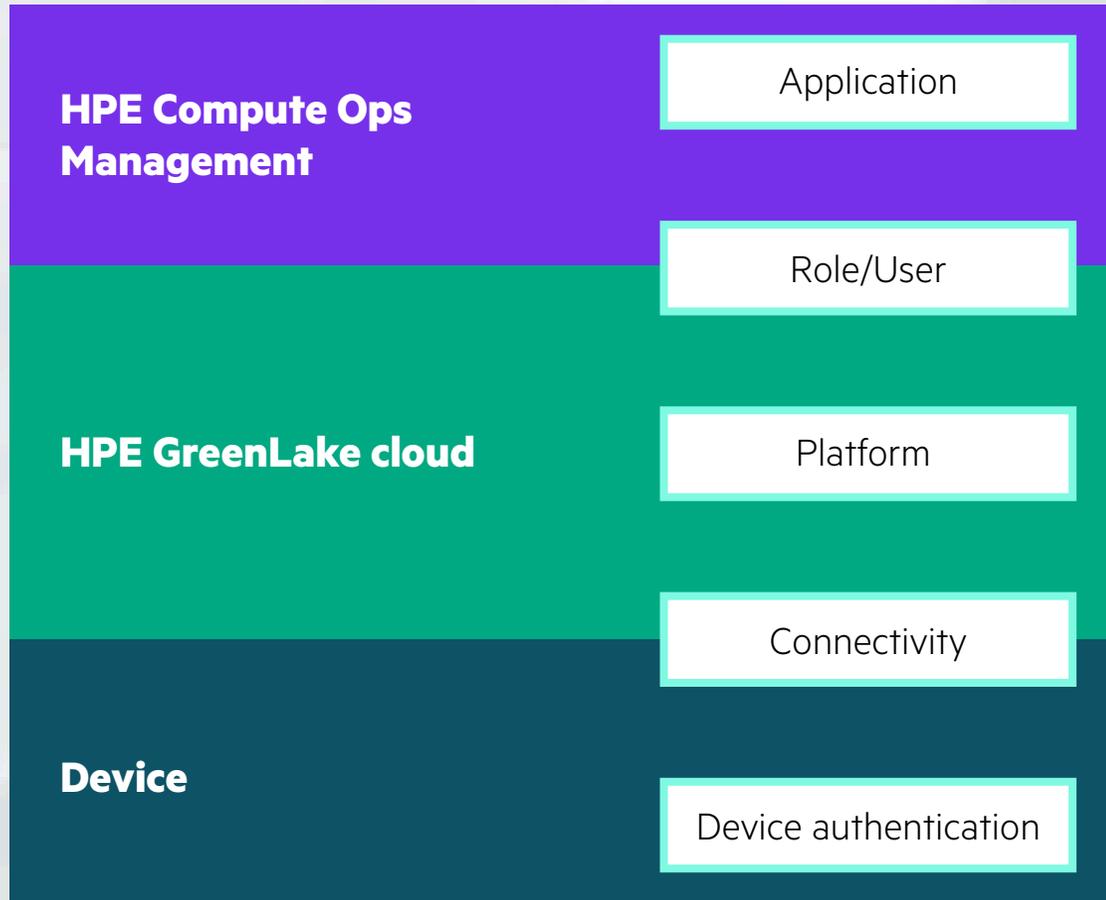
Avoid exposing servers to security vulnerabilities, data breaches, and compliance violations with access consolidation through a secure gateway

Shared security responsibilities

A shared security model allows customers to ensure security practices of their on-premises devices and connections to HPE GreenLake cloud

Security At Every Level

End-to-end security approach makes a difference



Secure device connections to Compute Ops Management and HPE GreenLake cloud are authenticated every time

Role-based access controls ensure authenticated, governed, and auditable user access at all levels

Streamlined single URL, SSO and comprehensive subscription management simplify access and administration

Secure, authenticated and encrypted connection from device to HPE GreenLake cloud and Compute Ops Management give you full control of your environment

HPE devices are secured and authenticated from factory to customer site ensuring end to end protection



HPE protection layers

Customer benefits

Enhance Data Center Security With A Secure Gateway

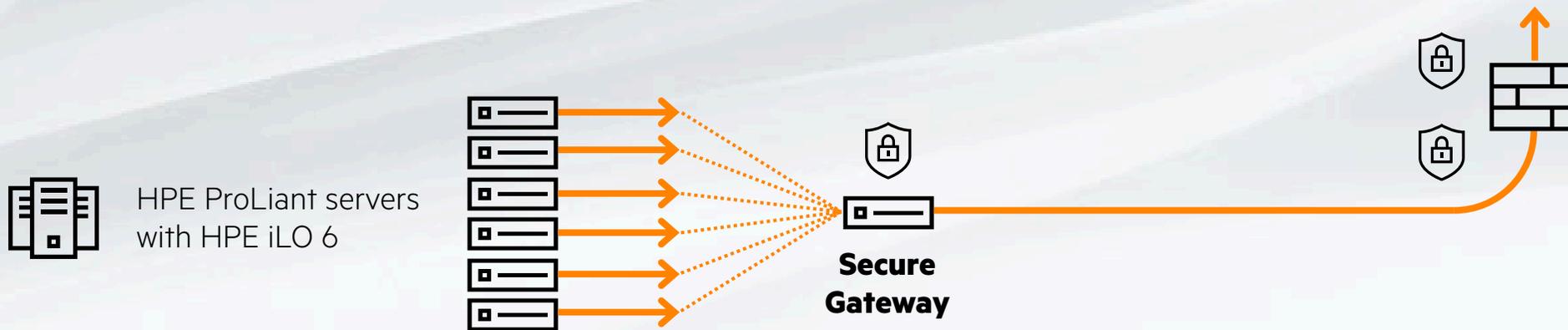
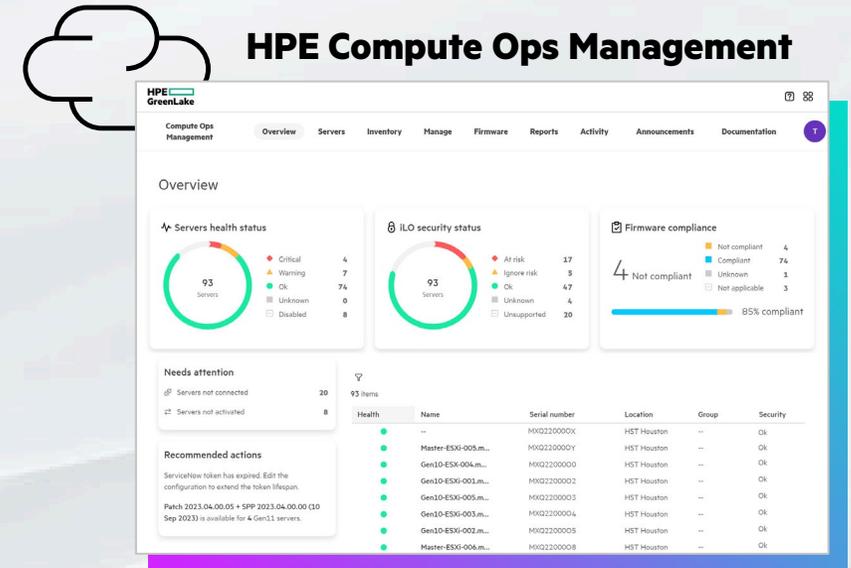
Avoid exposing servers to security vulnerabilities, data breaches, and compliance violations

Centralize security management by routing all iLO traffic through a secure gateway, simplifying administration

Reduce risk of exposed entry and attack points by external threats to individual servers

Improve bandwidth efficiency and reduce network strain by streamlining iLO traffic

Reduce update time with firmware caching feature



Improved Risk Management

HPE iLO Security Risk Monitoring

iLO security status

◆ Needs attention - 5

Default SSL Certificate In Use
Management processor's default self-signed certificate is in use.
Recommendation: Import a certificate.

Password Complexity
The Password Complexity setting is disabled. This configuration increases the system's vulnerability to attack.
Recommendation: Enable the "Password Complexity" setting.

Require Login for iLO RBSU
The Require Login for iLO RBSU setting is disabled. This configuration allows unauthenticated iLO access through the UEFI System Utilities.
Recommendation: Enable the Require Login for iLO RBSU setting.

SNMPv1
SNMPv1 is enabled. This configuration increases system vulnerability to attack.
Recommendation: Disable the SNMPv1 protocol.

Secure Boot
The UEFI Secure Boot setting is disabled. In this configuration, the UEFI system firmware does not validate the boot loader, Option ROM firmware, and other system software executables for trusted signatures. This configuration breaks the chain of trust established by iLO from power-on.
Recommendation: Enable the Secure Boot setting in the UEFI System Utilities.

▲ Ignore - 0

Configure iLO ignore risk setting **Cancel**

iLO security status

◆ At risk	4
▲ Ignore risk	1
● Ok	0
■ Unknown	19
☐ Unsupported	0

Gain visibility, Save time, Reduce risk

Benefit from configuration consistency and granular control over HPE iLO security settings

Fully manage HPE iLO security dashboard settings from within Compute Ops Management

- No need to log in to each server
- Provide consistent configurations across servers
- Configure groups of servers in minutes
- Quickly address critical settings such as Secure Boot or Firmware Integrity
- Easily evaluate servers that do not comply with best practices
- Ignore dashboard settings as determined to allow for company policies that differ across devices/locations

Security Certifications & Best Practices

HPE Compute Ops Management

SOC2 Type 1 certified

Support for servers running in FIPS mode

Supports mTLS 1.2 & 1.3 secure connection

Adheres to the Secure Software Development Framework (SSDF)

All connections originate from the Server

A quick overview of security certifications and best practices. More information on these can be found in the Compute Ops Management security guide, here: <https://www.hpe.com/psnow/doc/a50004539enw>

HPE Proliant Is Secure By Design—Throughout The Lifecycle

1

Design and build

Security is ingrained—
from the factory to your facility
with built-in server security

2

Secure operations

Securely manage your fleet of
servers using MFA, SSO, encryption,
RBAC, auditing and privacy controls

3

End of life

Retire legacy servers with simple,
safeguard removal of passwords,
configuration settings, and data



Automate

Reduce manual efforts and gain support efficiencies

Keep systems consistent

Maintain governance with policy driven automation controls and compliance tracking

Update servers faster and easier

Intelligent delta-based downloads for server and iLO firmware updates save time and effort

Manage and maintain at scale

REST APIs update servers with bulk scripted actions and set policy-based firmware compliance baselines

Speed time to resolution

Receive instant notifications of critical issues, use webhooks to create event triggers, and automate support case creation for hardware failures

Get Up And Running Quickly

Streamlined server configuration and deployment process in 3 easy steps:

1

Initial server startup

Activation assistance & connection

- To Start: Use token-based on-boarding into Compute Ops Management from iLO UI
- For follow-on systems with same token: Can use an automation script for token to on-board servers at scale

2

Establish policies

Create a server group

Set configuration policies for:

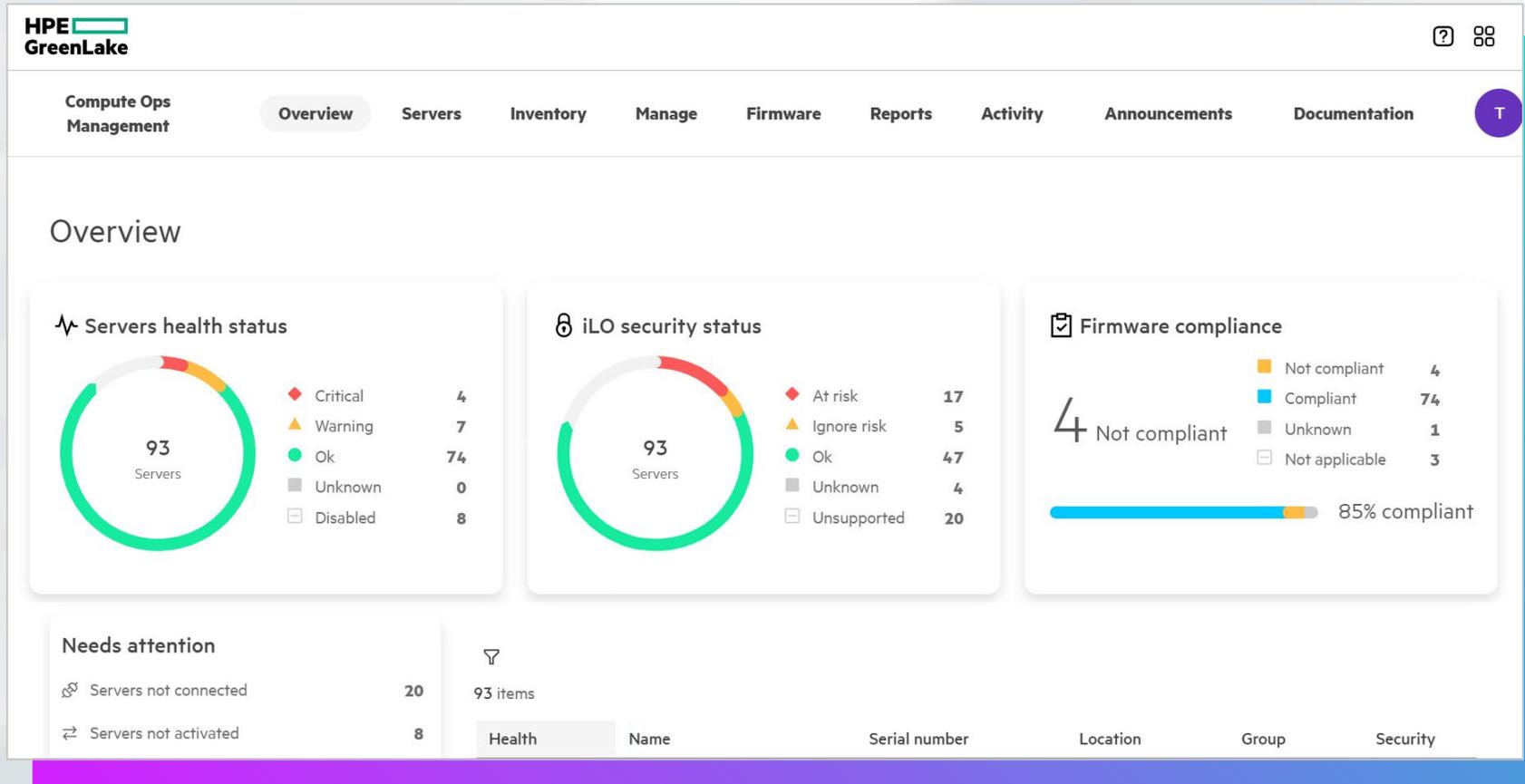
- Server workload profile
- OS deployment settings
- Firmware baseline
- Internal storage controller
- iLO security

3

Assign servers to group

Servers automatically assume policies and configs of assigned group

Monitor Environment Remotely Through Cloud-based Console



View health levels, security status, and firmware compliance of all servers across edge and data center locations



Key Automations And Integrations

Automations

Email alerts

Set up email notifications for critical hardware alerts

Automatic HPE support case creation

Enables faster resolution of critical issues and reduces the risk of unplanned outages

Tag-based server provisioning

Assign compute device tags to enable group policies for configurations, OS installs, BIOS settings and more

Automatic iLO firmware upgrades

Keep firmware up to date to support new features; without service disruption

Integrations

ServiceNow integration

Enables automatic creation of a ServiceNow incident ticket when iLO notifies Compute Ops Management that a hardware-related service event occurred

VMware lifecycle management HSM integration

Allows for seamless updating of firmware and drivers on HPE ProLiant servers managed through VMware vCenter

Webhooks integration

Enables automatic event triggering from connected apps that notify other tools and services of the event and initiates pre-defined task operations

Insights Supporting Your Sustainability Initiatives

Reports

Sustainability Utilization

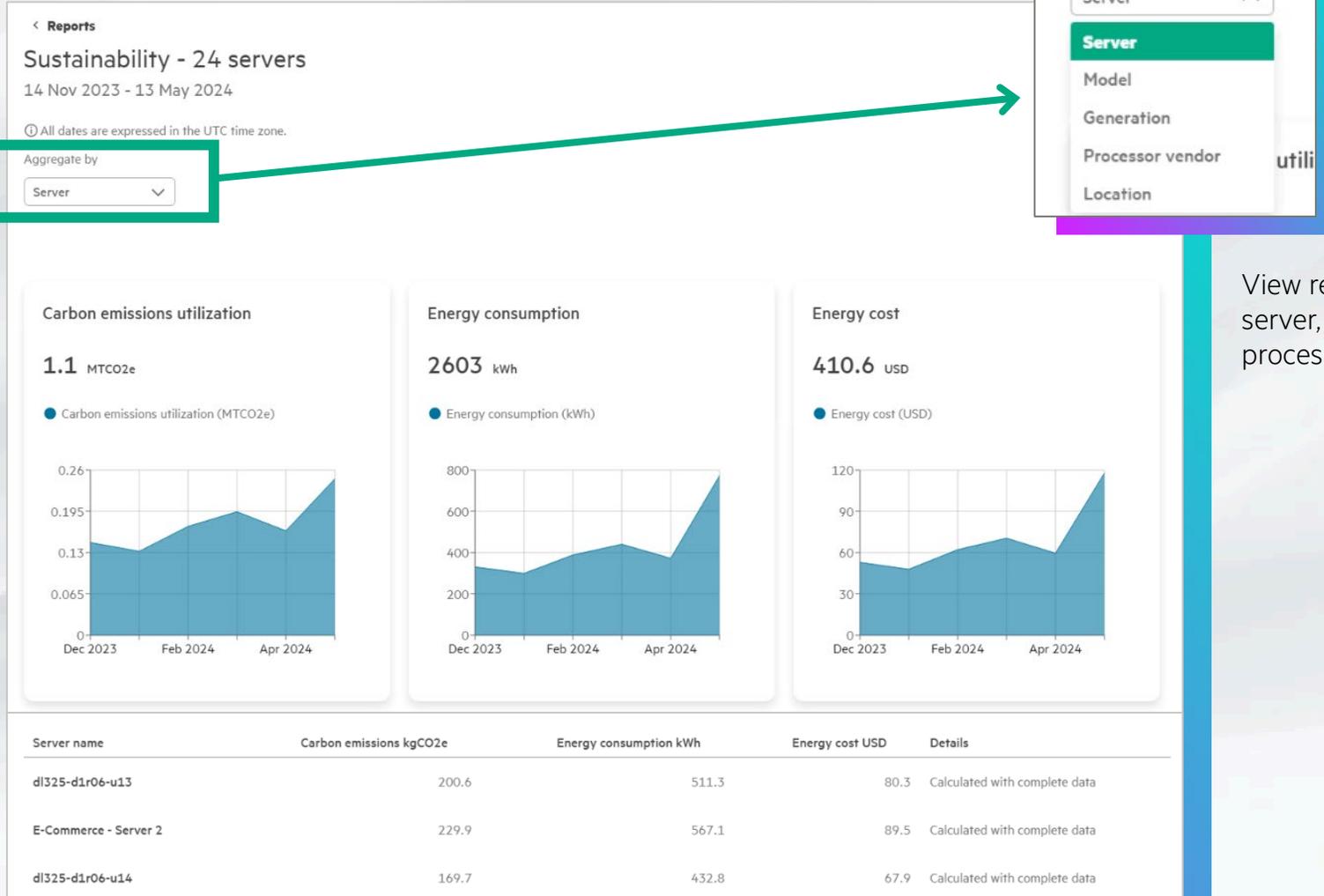
Determine your carbon emissions from energy consumption of the applicable servers.

Run report

View report

Run the report for specified timeframes up to 6 months

View carbon emissions, energy consumption and energy costs for all servers



View report by individual server, model, generation, processor vendor or location

Inventory Reports

Server hardware inventory

Inventory

Run a report to view server hardware inventory details.

Run report

View report

Run the report for all servers connected to Compute Ops Management

Aggregate by

Server

Server

Generation

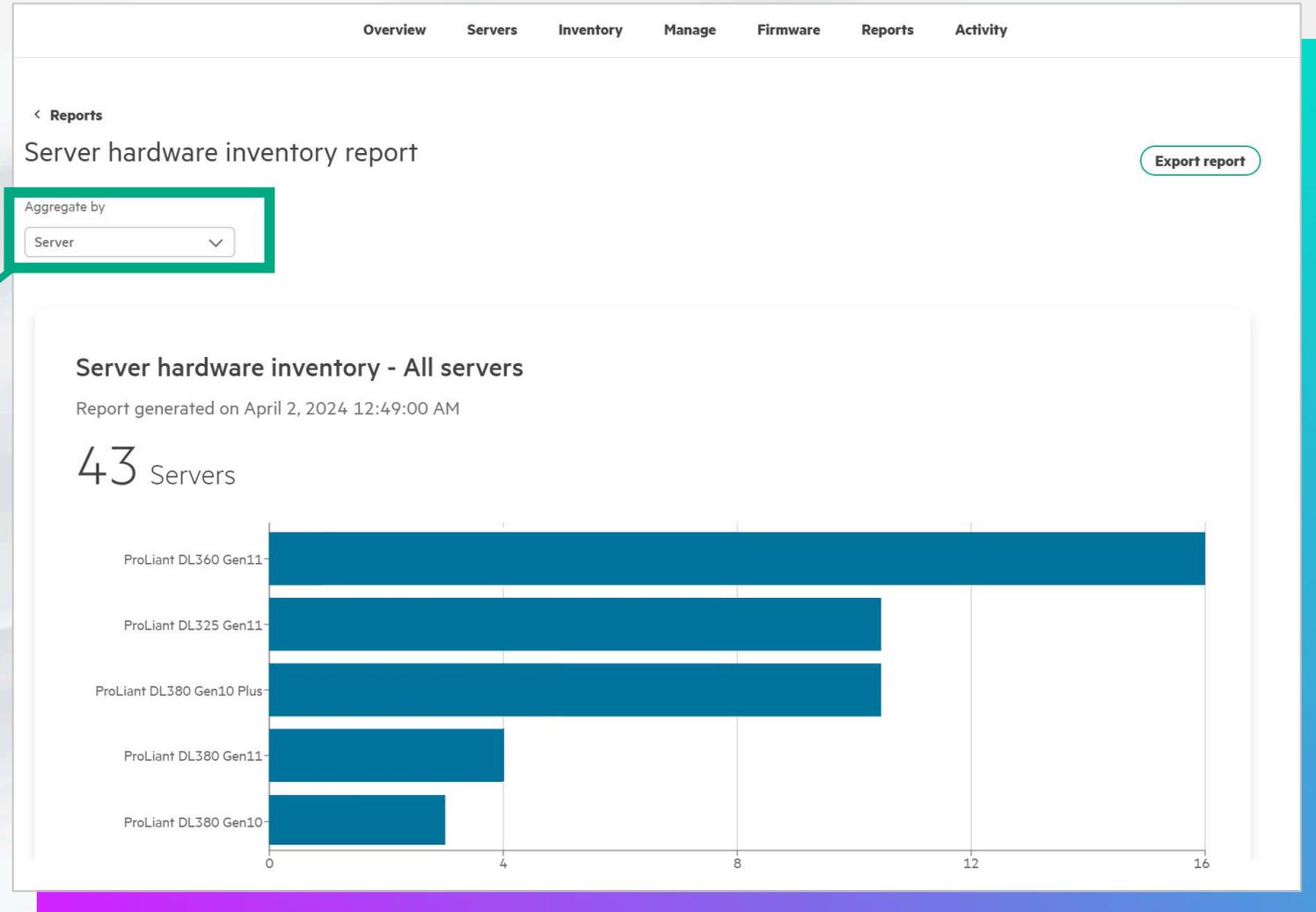
Model

Processor

Memory

Management

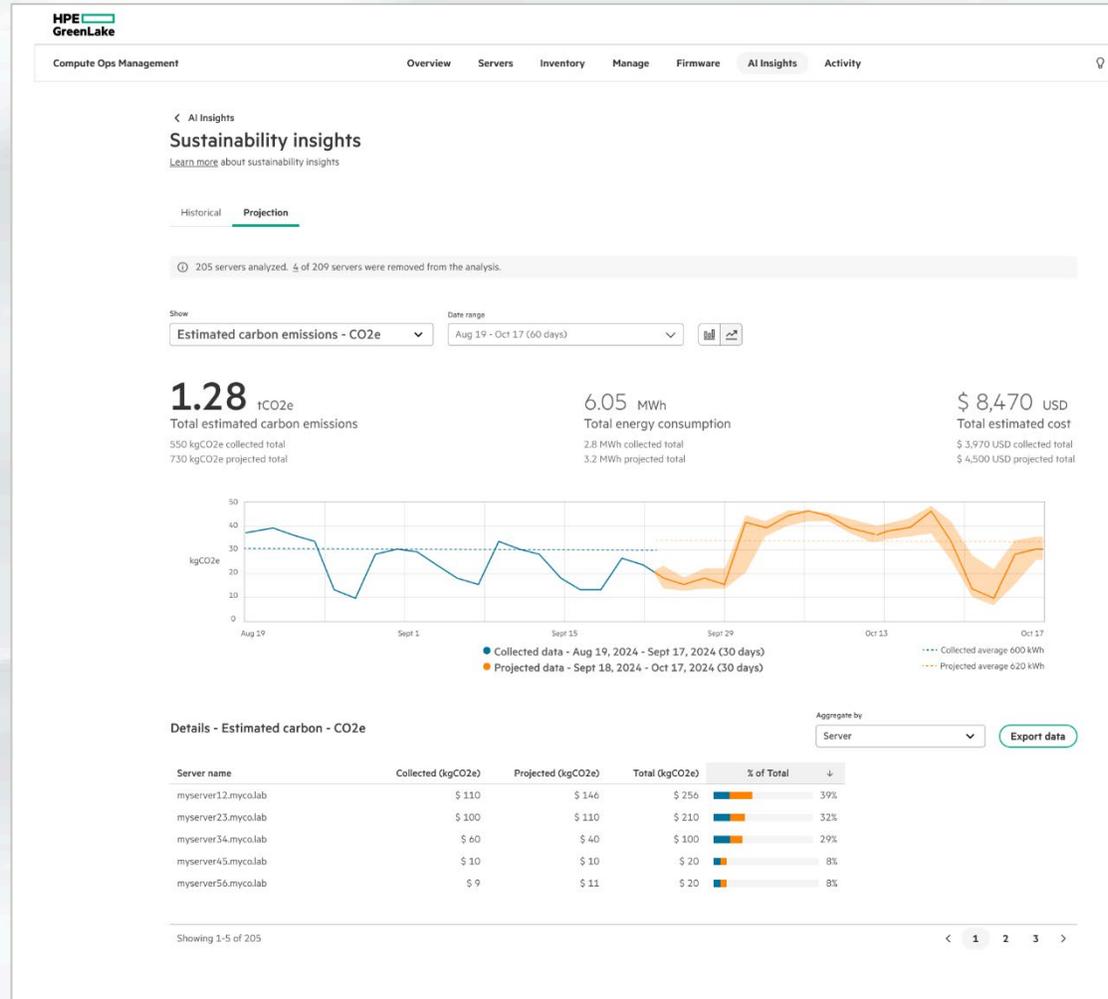
View report by individual server, generation, model, processor vendor, installed memory, or iLO management



Predictive AI Insights To Forecast Future Energy Costs And Carbon Emissions With Confidence.

Leverage predictive AI insights to forecast future energy costs and carbon emissions with confidence.

Use threshold-based alerting to stay informed with timely alerts when critical energy and carbon limits are reached, allowing for decisive actions when it matters most.



Configure metrics data collection and utilization alerts
Learn more about configuring metrics data collection and utilization alerts

Metrics data collection

Metrics data
Allow Compute Ops Management to collect metrics data for sustainability AI insights, utilization reporting.

Collect metrics data

By enabling metrics data collection, you are authorizing HPE to collect metrics data from the server. No other business information is collected and the data is managed according to HPE Data Privacy policy.

Utilization alerts

Sustainability metrics utilization alerts
Enable this option to receive an alert when the sustainability metrics for the current month are greater than the previous month by a higher amount than the configured threshold change percentage.

Utilization alerts

Threshold change percentage

Slider: 0% to 100%

Server groups
Optionally select one or more server groups to limit utilization alerts to those servers in the selected group(s).

Select

If no group is selected, the utilization alerts policy will apply to all servers in the workspace. If a group is selected, the policy will only be applied to the group's assigned servers.

Cancel Save



Reduce Time Managing Remote Servers Up To 75%²

Firmware & OS driver updates, including security patches

Update faster

Intelligent delta-based downloads for server and iLO firmware updates save time and effort

Set firmware baselines and compliance

Get notifications and process updates in a few clicks when something needs to be addressed

vCenter integration unifies actions within VMware operations

Improved latency for edge sites reduces communication timeouts

The screenshot displays the 'Firmware' management interface. At the top, there are navigation tabs: Overview, Servers, Inventory, Manage, and Firmware. The 'Firmware baselines' section is active, showing 'Quick actions' with two 'Update to latest Gen11 patch' buttons. A callout box highlights the first update action, which includes the text: 'Patch 2023.10.00.03 + SPP 2023.10.00.00 (05 Feb 2024) is the latest patch available for 2 of your Gen11 servers.' Below this, a table titled 'Firmware baselines' shows the status of various baselines. A separate panel on the right, titled 'Step 1 of 3 Setting the baseline', provides configuration options for the baseline, including 'Firmware baseline' (Patch 2023.10.00.03 + SPP 2023.10.00.00 (05 Feb 2024)), 'HPE drivers and software' (toggle off), 'Downgrade components to match baseline' (toggle off), and 'Power off server after firmware update' (toggle off). A 'Next' button is visible at the bottom right of the configuration panel.

Baseline	Count	Version	Count
Not set	67	2.81 Mar 07 2023	8
Not applicable	9	2.55 Oct 01 2021	1
Unknown		Not set	67

² A commissioned study conducted by Forrester Research, New Technology: The Projected Total Economic Impact™ of HPE Compute Ops Management, June 2024

Evolution Of AIOps Within Compute Ops Management



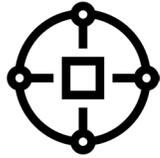
Inventory Insights

Equipment | Software | Notifications
EOS/EOD Lifecycle Management + Planning



Intelligent alerting

Threshold monitoring
automated incident creation



Case requests & tracking

Automated case routing
ServiceNow integration



Smarter insights

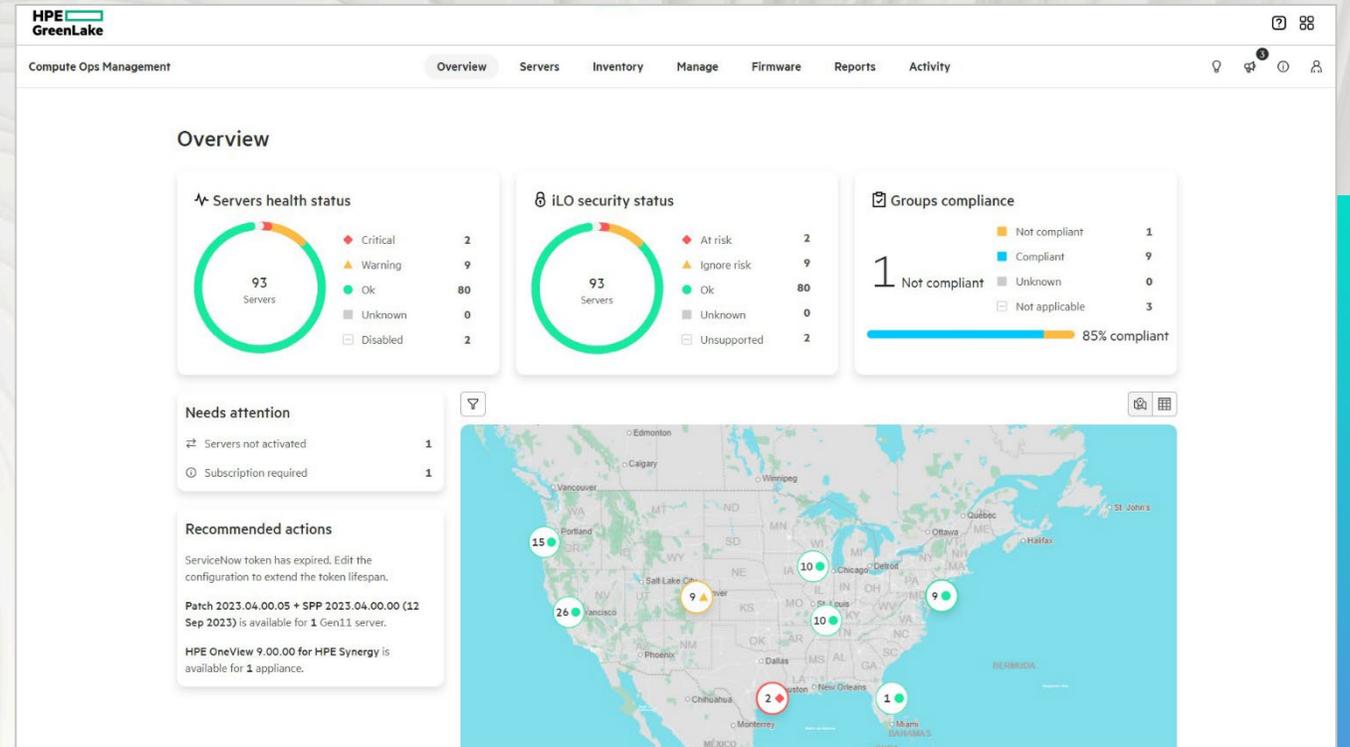
Root Problem Diagnosis | Reporting
On-going Communication | AI/ML Capability

Customers benefit from:

- **Effortless asset management** through automated compute inventory tracking
- **Faster incident detection** and resolution with AI/ML driven correlation and aggregation
- Proactive incident notifications creates **more efficient IT Service Management (ITSM)**
- Reduced help desk calls enhances efficiency and **speeds Mean Time to Resolution (MTTR)**

Benefits Of Modern Management

Compute lifecycle management
with cloud agility and simplicity



- Monitor and manage global server environments from a single console with enterprise security and consistent, compliant processes
- Easily onboard and update 1000s of distributed devices
- Organize devices with group tags and labels
- Focus on key tasks with intuitive dashboards

HPE Supported Platforms

By HPE Compute Ops Management

HPE ProLiant Servers

HPE ProLiant Gen10, Gen10 Plus, Gen11 & Gen12 servers

HPE Edgeline Systems

HPE Edgeline e920, e920d, and e920t server blades connected to HPE Edgeline EL8000 Systems

HPE Alletra 4000 Storage Servers

HPE Alletra Storage Server 4110, 4120, and 4140 models

HPE StoreEasy Storage

HPE StoreEasy Storage 1470, 1570, 1670, and 1870 models

Compute Ops Management Enables IT Teams To Spend Less Time...

...managing servers

- **Update 100s of servers** with bulk actions
- **Easily organize devices** with group tags and labels
- **Focus on key tasks** with intuitive dashboards

...managing tools

- **Easily integrate best-in-class software** from HPE and partners
- **Scale instantly and massively** across edge to cloud
- **Integrate and automate** easily using Redfish-based APIs

...dealing with downtime

- **Resolve problems before they occur** with monitoring and self-healing
- **Automate software updates** to simplify operations and improve efficiency



HPE Compute Management Portfolio

HPE Compute Ops Management

Cloud-based lifecycle management to monitor, manage, and view your distributed environment



HPE OneView

On-premises management to automate IT operations of your dark-site and HPE Synergy environments



HPE Compute Ops Management – OneView Edition

Cloud-based extension to manage and view your OneView environments from Compute Ops Management



HPE iLO (Integrated Lights-Out)

Embedded management to support, optimize, and monitor your servers



HPE GreenLake Cloud

Centralized, cloud-based platform for managing your environment

- Single sign-on
- Device inventory
- License management
- User and role permissions

The screenshot displays the HPE GreenLake Cloud user interface. At the top left is the HPE GreenLake logo, followed by the user name 'DreamCompany' and a dropdown arrow. On the top right are navigation links for 'Home', 'Services', and 'Devices'. The main content area is divided into two sections: 'Getting Started' and 'Recent Services'. The 'Getting Started' section includes two cards: 'Find Services' (with a grid icon) and 'Manage Workspace' (with a person icon). The 'Recent Services' section features a list of service cards, each with a 'Launch' button. The services listed are: Compute Ops Management (Compute), Aruba Central (Networking), Data Services (Storage), HPE Sustainability Insight Center (Management & Governance), and OpsRamp (Management & Governance). A 'My Services' link is visible in the top right of the 'Recent Services' section.



Introducing Support For MSPs & Partners In HPE Compute Ops Management

Boost your bottom line with current resources



Set up

new service offerings

Operate & optimize

customer's environment

Manage

compute lifecycle

Integrate

with your existing tools



Seamless, Efficient Multi-Tenant Compute Management

Securely monitor and manage

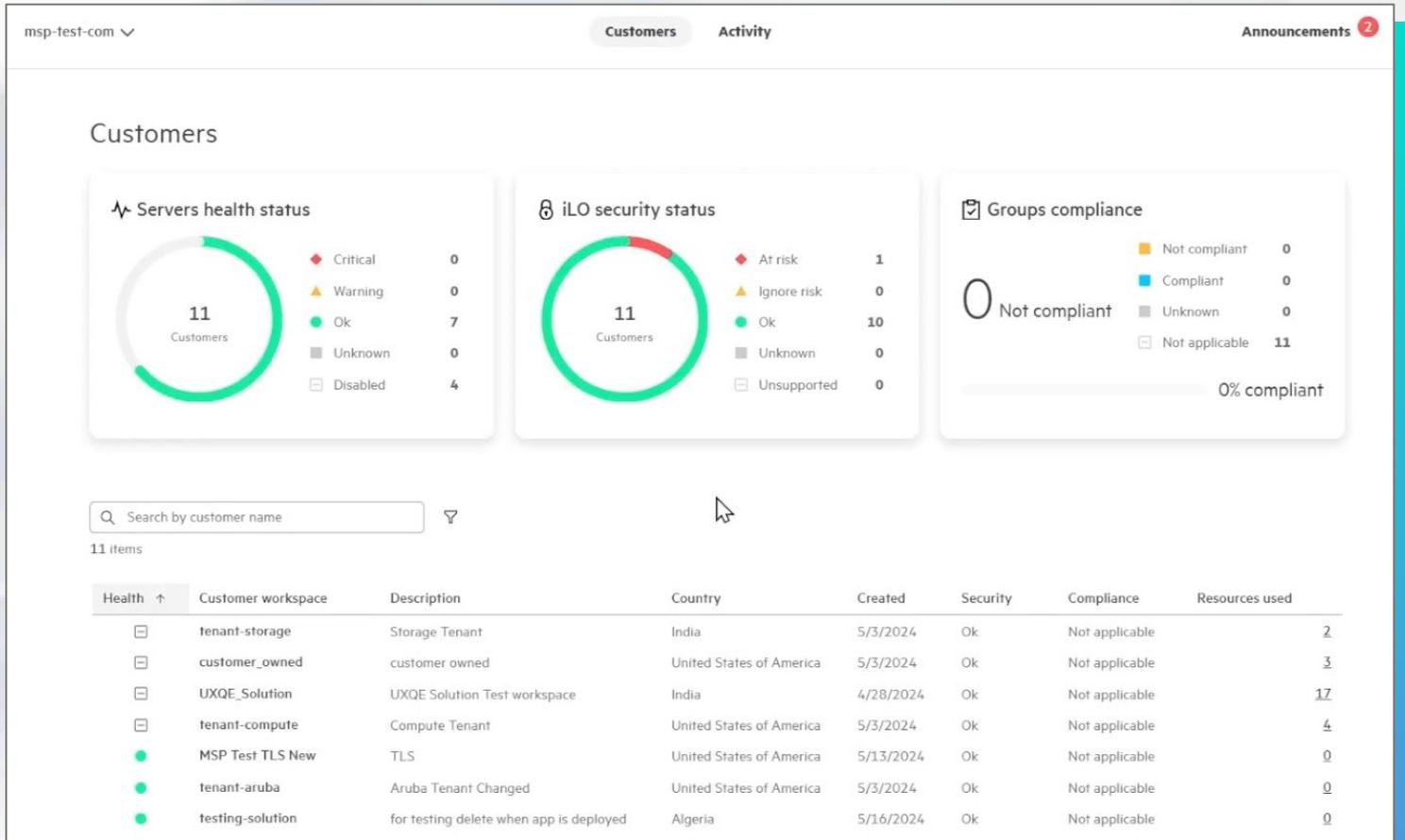
your customers' server environments from a secure, cloud-based console

Keep your customers' infrastructure up-to-date

with the latest firmware, security patches to help them maintain governance and compliance policies

Proactively monitor health and security status,

automate critical hardware support cases as well as report out sustainability metrics

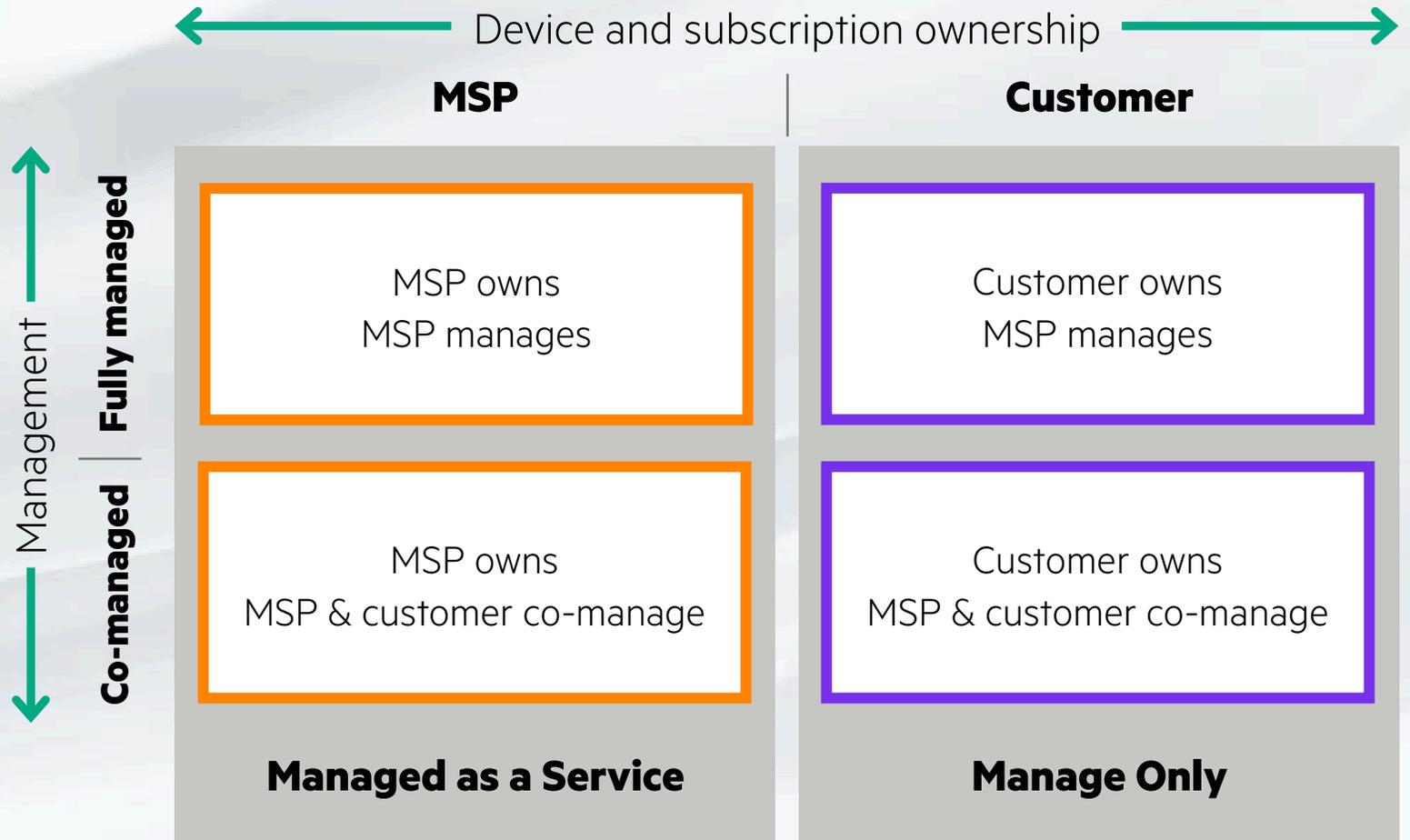
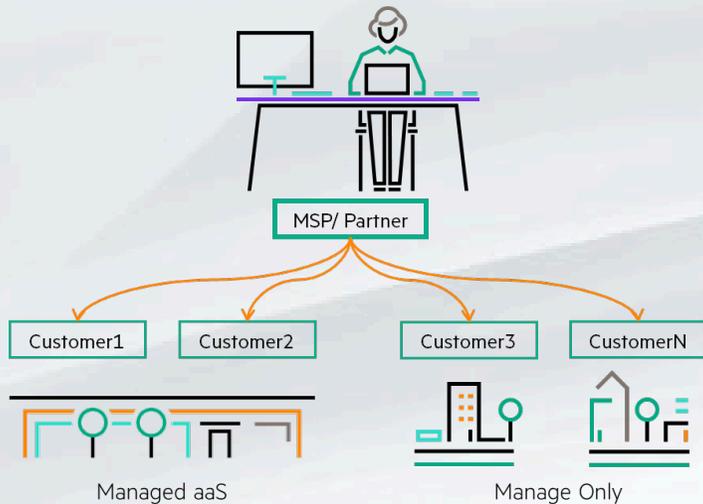


Manage customer workspaces within Compute Ops Management

MSP Business Models

MSPs have **two** business models, based on who owns the devices and subscriptions.

In either, the MSP might **fully manage** an environment or **co-manage** with the customer.



Next Steps

See a demo today

Just ask your sales rep to walk you through a [live set up](#)

Share with colleagues

[Explainer video](#) | [Quick demo video](#) | [Core Compute Ops Management Portfolio Briefcase](#)

Check out the savings

[Forrester TEI study](#) | [ROI calculator](#)

Try it out

[90-day trial license](#), for up to 10 servers

hpe.com/info/COM

Thank you



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