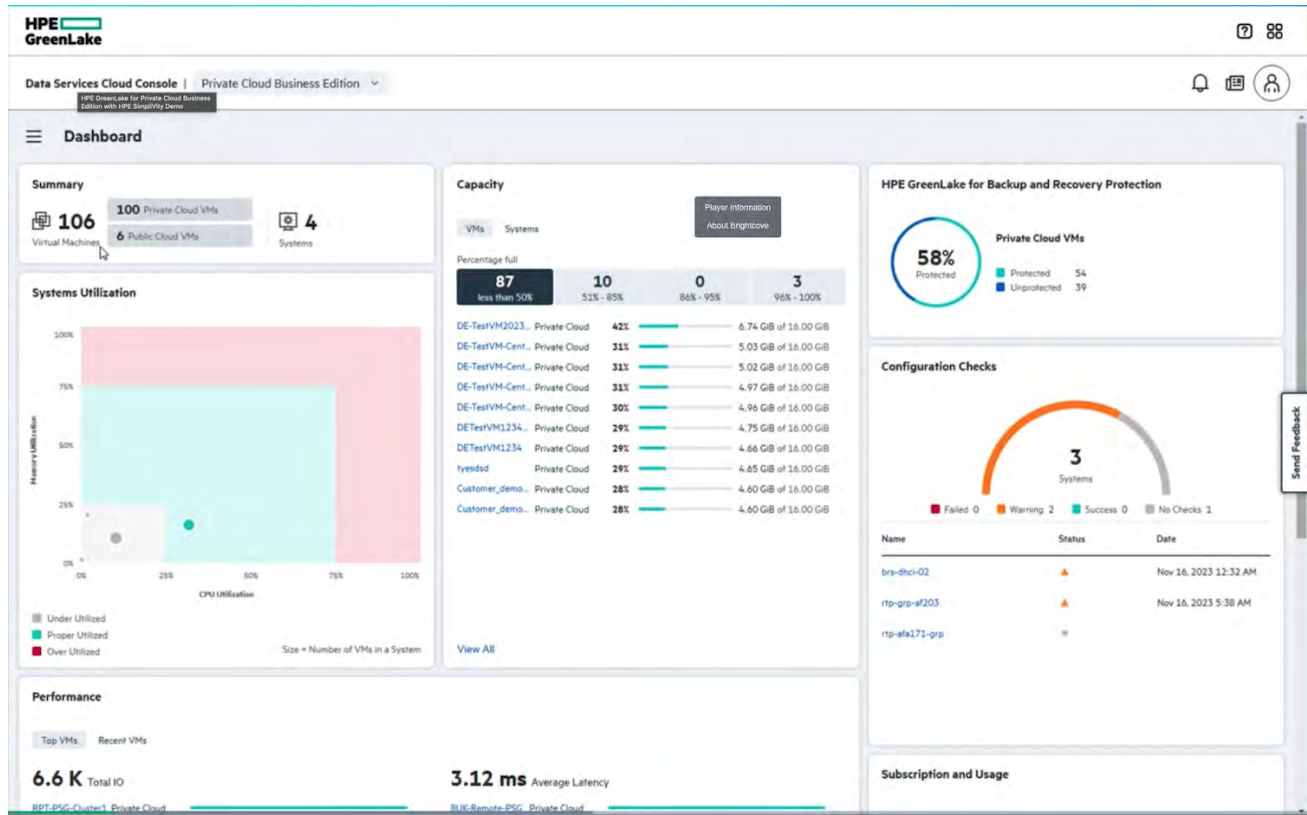


January 2024

Elevate Your Cloud Experience: HPE GreenLake for Private Cloud Business Edition



Intro



In June 2020, Hewlett Packard Enterprise announced the release of [HPE GreenLake Cloud Services](#) to bridge the gap for hybrid and multi-cloud enterprises. This year, they have expanded that offering even further with HPE GreenLake for Private Cloud Business Edition. Offering even greater flexibility and options, HPE GreenLake for Private Cloud Business Edition provides enterprises with a highly tailored and efficient experience in choosing the infrastructure and capacity to fit their business needs.

This unique experience and offering makes HPE GreenLake more attractive as a hybrid cloud infrastructure option than the more ubiquitous cloud offerings, such as Amazon Web Services and Azure. It is specially designed for businesses seeking the agility of cloud consumption models combined with the control of on-premises infrastructure. It offers simplified deployment with predefined configurations, allowing for quicker setup and reduced complexity. Given its optimization for specific workloads, businesses can ensure performance efficiency without the overhead of managing a vast array of services often present in large public clouds. Additionally, for enterprises concerned with data sovereignty, regulatory compliance, or specific security postures, the Business Edition provides the advantage of data locality and heightened control over their environment.

In short, HPE GreenLake for Private Cloud Business Edition is a self-managed private cloud solution with a unified interface to simplify VM to infrastructure management. It allows you to build your self-service cloud on demand where you need it, with a choice of predictable monthly billing or upfront payment.

Infrastructure

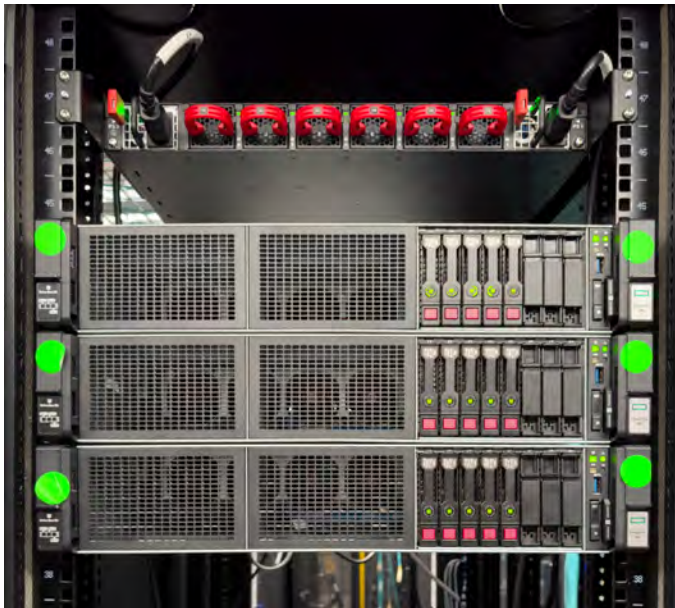
To start with HPE GreenLake Private Cloud Business Edition, users must first provision hardware to build their private cloud. For on-premises, HPE primarily utilizes cloud-native infrastructure comprised of HPE Alletra disaggregated HyperConverged Infrastructure (dHCI) for business-critical workloads or HPE SimpliVity (true HCI) for distributed-edge sites. It provides enterprises with a complete private cloud package, keeping with the HPE GreenLake concept of flexibility for organizations with varying workloads.

HPE has partnered with Amazon Web Services to supplement their on-premise offering to utilize their EC2 instances as the Public Cloud segment. Combining these two solutions allows HPE GreenLake to present a unified hybrid cloud to enterprises looking for the right solution to fit their needs.

Once you have provisioned the hardware and prepared the cloud configuration via Amazon Web Services, you can begin provisioning virtual machines, policies, backups, health checks, and any other myriad of services HPE GreenLake offers.

HPE SimpliVity

For a quick refresher on HPE SimpliVity and an update on its capabilities, it is a true HyperConverged Infrastructure (HCI) appliance that combines all the primary features and services necessary for server functionality (like computing, networking, and storage) into one big box. It significantly improves data efficiency and security along with built-in resiliency.



Previously, it was accessible and managed via a centralized portal. With the introduction of HPE GreenLake Private Cloud Business Enterprise, HPE SimpliVity can be managed within the HPE GreenLake platform.



Within HPE GreenLake, the accessibility of an HPE SimpliVity system versus an HPE Alletra system is displayed in a common view. It is within the Systems portal and is only delineated by the system type.

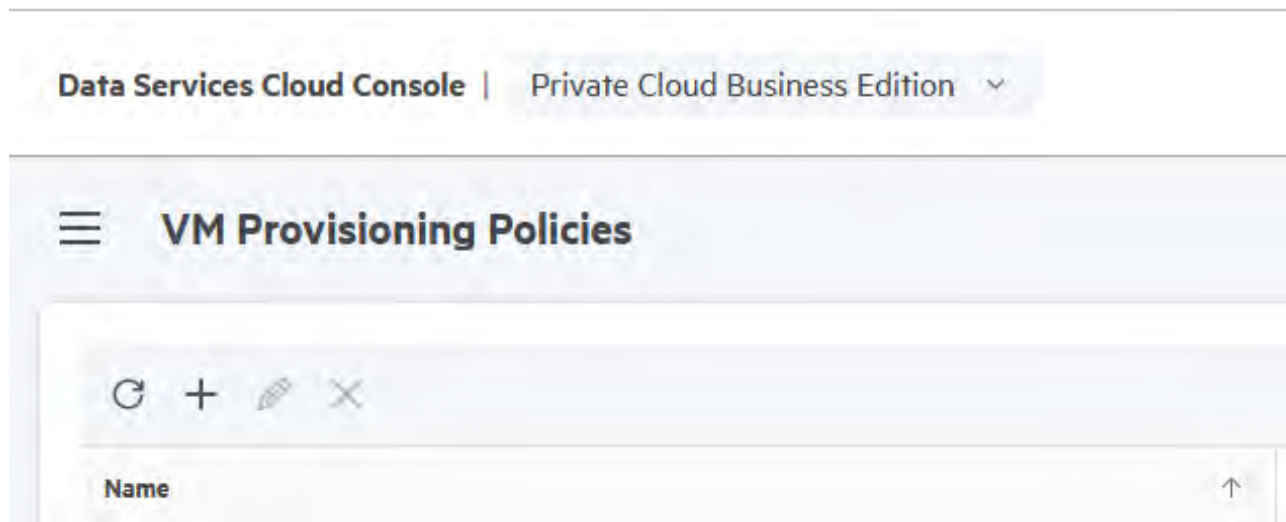
The screenshot shows the 'Systems' page in the Data Services Cloud Console. The page title is 'Private Cloud Business Edition'. Below the title, there are several action buttons: 'Refresh', 'Migrate', 'Run Prescribed for Software Updates', 'Software Update', 'Run System Health Checks', and 'Refresh Software Version'. A 'Summary' button is located in the top right corner of the table area.

Name	State	Hypervisor Clusters	System Type	VM Count	Health	Storage Usage
<input type="checkbox"/> brs-dhcf-02	Online	dHCI-Remote-CL1	dHCI	10	Ok	0% 66.51 GiB of 11.21 TiB
<input type="checkbox"/> BRS-Local	Online	BRS-Local	SimpliVity	3	Ok	0% 351.92 GiB of 1.18 PiB
<input type="checkbox"/> rtp-afa171-grp	Online	2	dHCI	96	Ok	10% 3.14 TiB of 29.56 TiB
<input type="checkbox"/> rtp-grp-af203	Online	Alletra-dHCI-Clst-02	dHCI	75	Ok	8% 2.47 TiB of 29.56 TiB

Rows selected: 0

Virtual Machine Provisioning Policies

Virtual Machine Provisioning Policies are critical to a successful overall hybrid deployment strategy. To access the VM Provisioning Policy portal, select the horizontal bars menu button on the top left to open the list of options to access portals. From there, choose VM Provisioning Policies, which will open the main page of all the policies currently available in your environment.



To create a new VM Provisioning Profile, click the “+” icon in the top left, and a window will open to allow you to begin filling out the required information. You will need to name the profile and provide a basic description. Select the appropriate radio button for Deduplication, Data Encryption Cipher, or All-Flash if these are the options you need. Hovering your cursor over the information icon to the right of each option provides additional information about what these options are used for. Finally, you can leave the QoS Performance settings as their default of the one million IOPS Limit or adjust them to fit the environment.

The screenshot shows a configuration window for a VM Provisioning Profile. At the top, there are three tabs: "General" (which is selected and highlighted in green), "Protection Policy", and "Summary". Below the tabs, there are two text input fields. The first is labeled "* Name" and contains the text "SR-VM-ProvPolicy01". The second is labeled "Description" and contains the text "Test Provisioning Policy". Below these fields are two radio button options: "Deduplication" and "Data encryption cipher", both of which are currently unchecked. Each option has a small blue information icon to its right. At the bottom of the window, there are three buttons: "Cancel" on the left, "Back" in the middle, and "Next" on the right. The "Next" button is highlighted in green.

Progress: **General** | Protection Policy | Summary

Deduplication ⓘ

Data encryption cipher ⓘ

All-Flash ⓘ

QoS Performance Traffic between VM and Storage Array

* MB/s Limit: ⓘ

* IOPS Limit: ⓘ

Cancel **Back** **Next**

Progress: **General** | **Protection Policy** | Summary

Select Protection Policy (optional)

ADMG-Nashville-DemoStor...		ADMG-Nashville-Policy		Array-Hourly-Snap	
Policy type	User defined	Policy type	User defined	Policy type	User defined
Used by	1 resources	Used by	7 resources	Used by	0 resources
Assigned	Yes	Assigned	Yes	Assigned	No
Snapshot	every 4	Snapshot	every 6	Snapshot	every 4
Backup		Backup			
Cloud Backup		Cloud Backup			
		Cloud Backup			

Don't like the recommendations? [View all protection policies](#)

Cancel **Back** **Next**

Progress bar: General (checked), Protection Policy (checked), Summary (active)

General

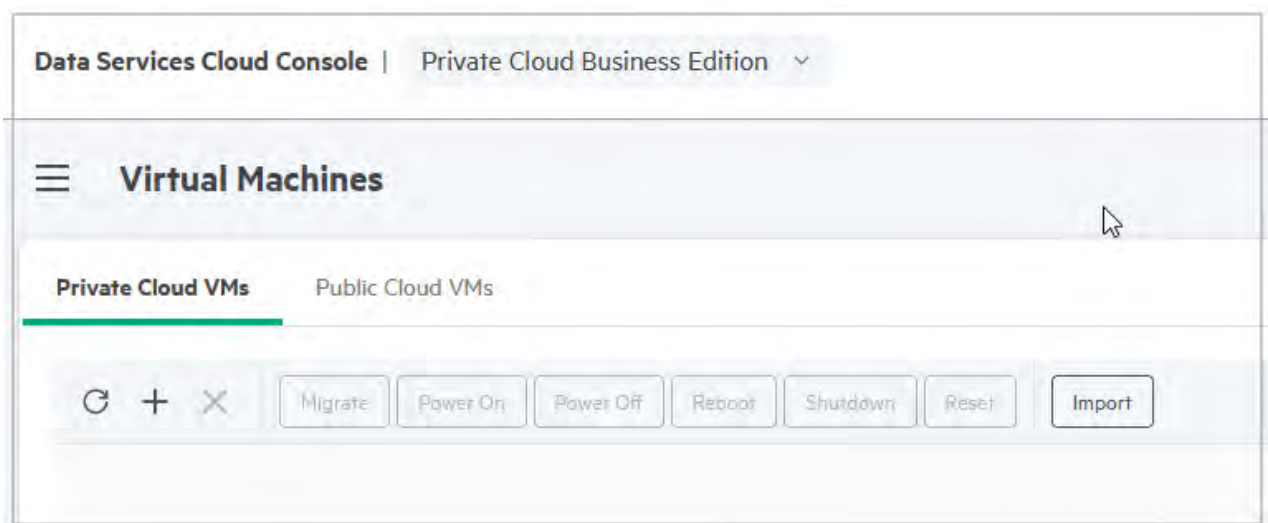
Name	SR-VM-ProvPolicy01
Description	Test Provisioning Policy
Deduplication	Disabled
All-Flash	No
Data Encryption	None
IOPS Limit	1000000
MB/s Limit	1000000

Buttons: Cancel, Back, Create

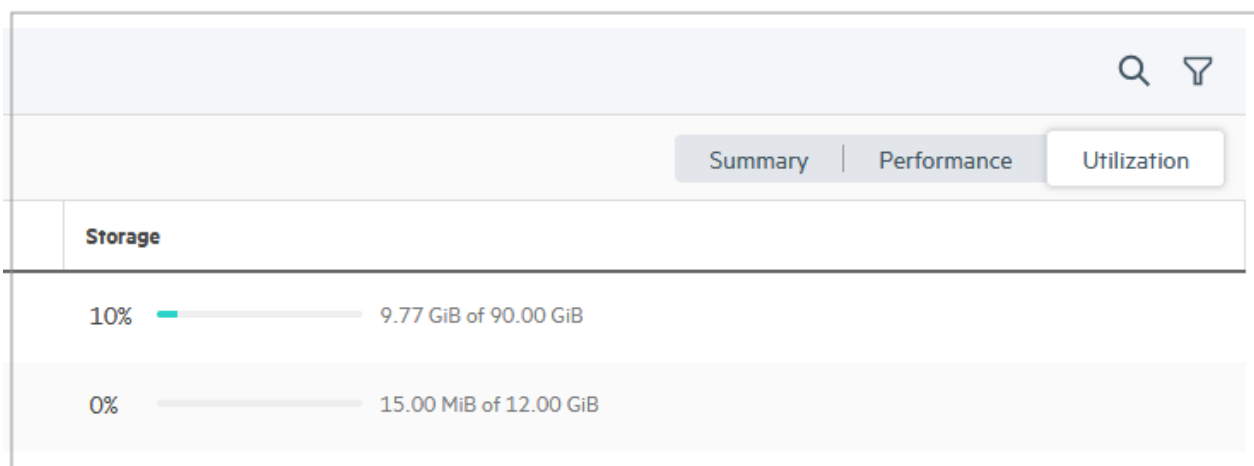
Monitoring Virtual Machines

Once you have created a Provisioning Policy, return to the Virtual Machines page to create the desired instances.

In the top menu, you can view your Private (physical) Cloud VMs or the Public Cloud VMs (AWS).



The main page gives you a brief view of the VMs in your environment and other fundamental data about them, including status and data protection details. You can sort them by any of the characteristics listed and even have the option to view their current performance and utilization statistics from buttons on the right-hand side.

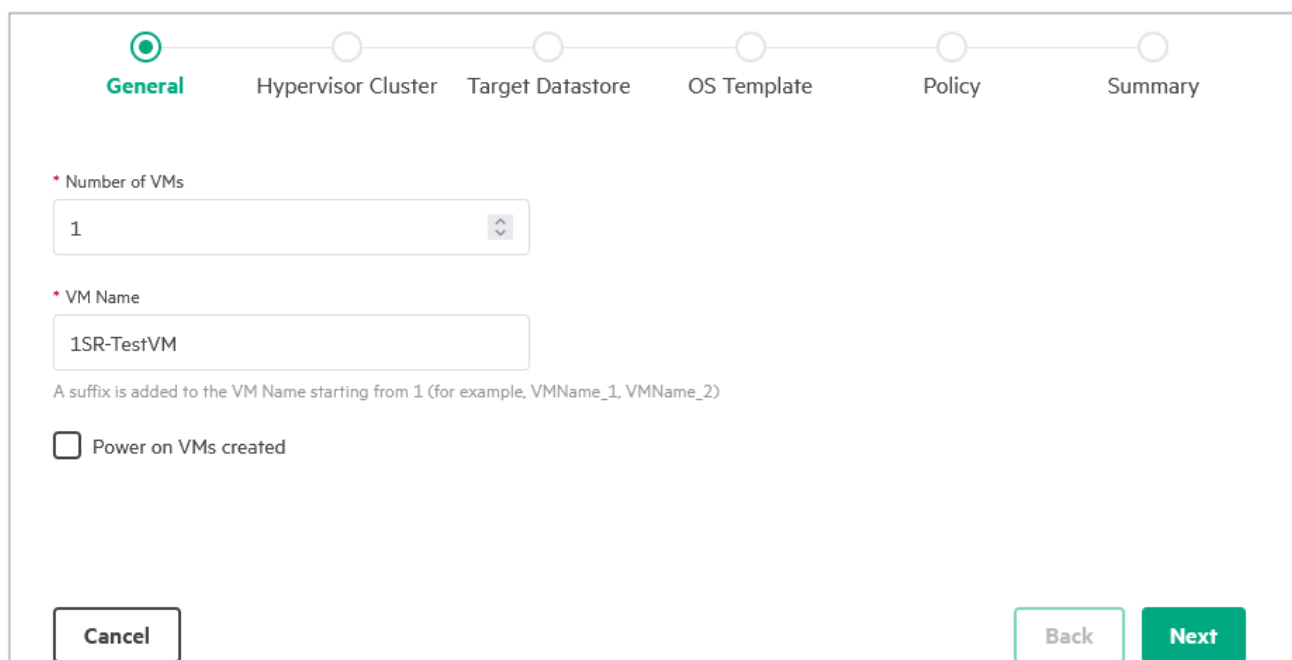


The Public Cloud view is no different other than it does not have as much information to display due to the lack of physical hardware needed to monitor.

Creating a Virtual Machine – Private Cloud

To create a new Virtual Machine, click the (+) icon in the top left corner to bring the creation window front and center.

The first section is the General information: VM Names, Number of VMs, and if you want them powered on after creation.

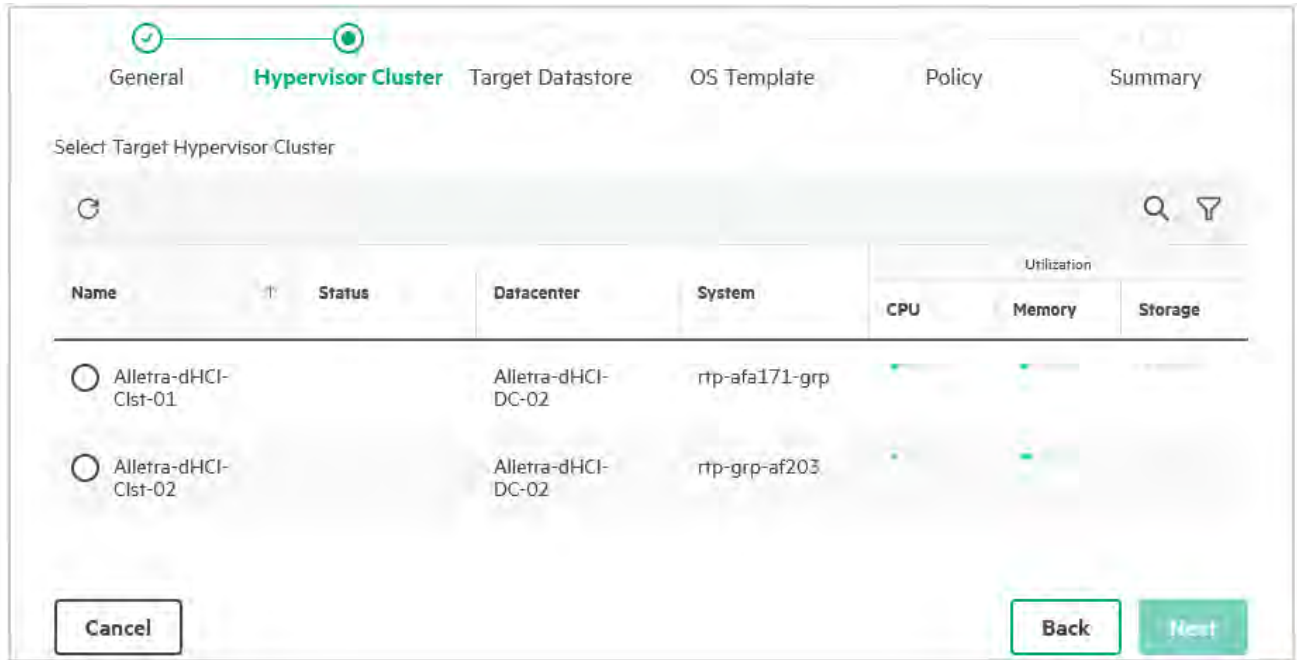


The screenshot shows a multi-step wizard for creating a Virtual Machine. The steps are: General, Hypervisor Cluster, Target Datastore, OS Template, Policy, and Summary. The 'General' step is currently active and highlighted in green. It contains the following fields and options:

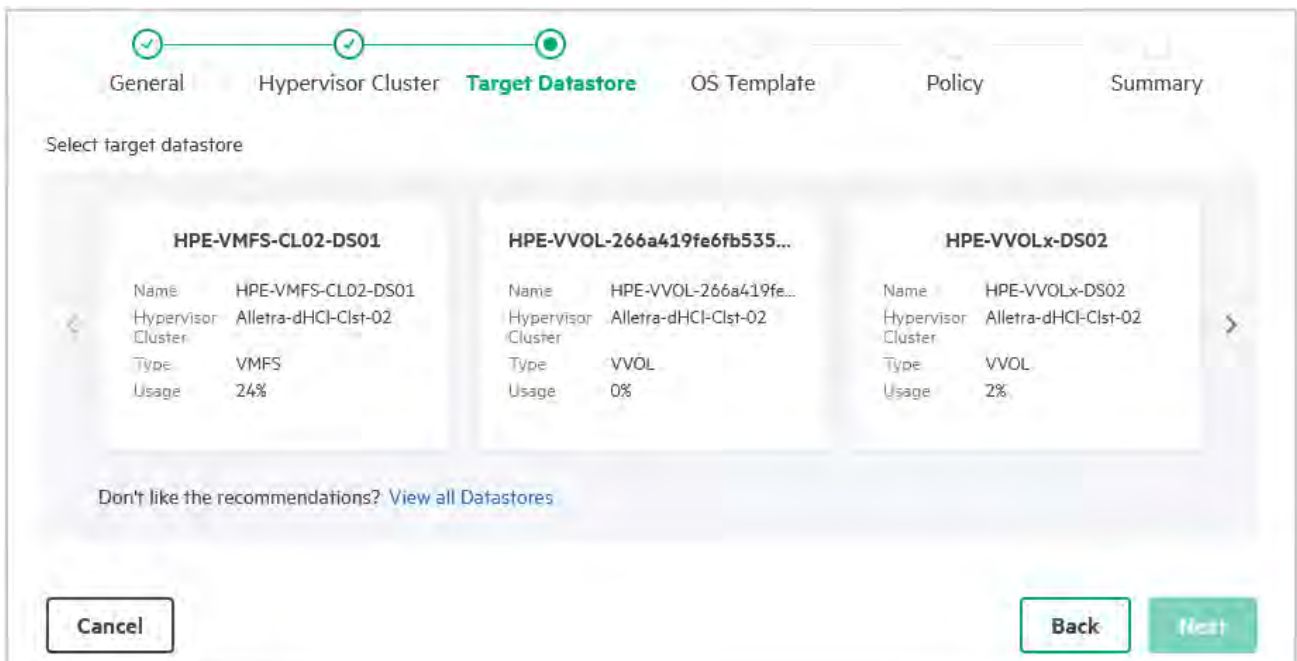
- Number of VMs:** A dropdown menu with the value '1' selected.
- VM Name:** A text input field containing '1SR-TestVM'. Below this field is a note: "A suffix is added to the VM Name starting from 1 (for example, VMName_1, VMName_2)".
- Power on VMs created:** An unchecked checkbox.

At the bottom of the form, there are three buttons: 'Cancel' (left), 'Back' (middle), and 'Next' (right, highlighted in green).

In the next section, select the Hypervisor cluster where these VMs will be created. You can choose either HPE SimpliVity or HPE Alletra dHCI clusters.



In Section 3, choose the Target Datastore.



Next, select your desired Operating System template.

The screenshot shows a configuration wizard with six steps: General, Hypervisor Cluster, Target Datastore, OS Template, Policy, and Summary. The 'OS Template' step is currently active. Below the progress bar, the text 'Select Operating System Template' is displayed. Three template cards are shown: 'CentOS-OVF', 'Rocky Linux 8.7', and 'WIN2016-OVF'. Each card lists 'Description' and 'Library' (HPE-PCBE-Images). A link 'View All Template Items' is present. At the bottom, there are 'Cancel', 'Back', and 'Next' buttons.

Template Name	Description	Library
CentOS-OVF		HPE-PCBE-Images
Rocky Linux 8.7	Imported as an o...	HPE-PCBE-Images
WIN2016-OVF		HPE-PCBE-Images

The screenshot shows the same configuration wizard, but now the 'Policy' step is active. The text 'Select Policy (preconfigured storage attributes)' is displayed. Three policy cards are shown: 'ADMG-Nashville-HCI-Policy', 'ANewTestPol12345', and 'AllFlash-Dedup-Encrypted-...'. Each card lists 'Deduplication', 'All Flash', 'Encryption', and 'Protection Policy' attributes. The 'ANewTestPol12345' card is highlighted with a green border. A link 'View All Compatible Policies' is present. At the bottom, there are 'Cancel', 'Back', and 'Next' buttons.

Policy Name	Deduplication	All Flash	Encryption	Protection Policy
ADMG-Nashville-HCI-Policy	Yes	Yes	Yes	ADMG-Nashville...
ANewTestPol12345	Yes	Yes	Yes	RTP-Cluster1-Lo...
AllFlash-Dedup-Encrypted-...	Yes	Yes	Yes	DE-LocalSnap

Finally, the Virtual Machine Provisioning Policy specifies the enterprise-class protection policy for data protection and leverages HPE GreenLake for Backup and Recovery.

Once all the various options and configurations have been selected, click Create to submit the VM for creation to your infrastructure stack.

Step	Status
General	Completed
Hypervisor Cluster	Completed
Target Datastore	Completed
OS Template	Completed
Policy	Completed
Summary	Active

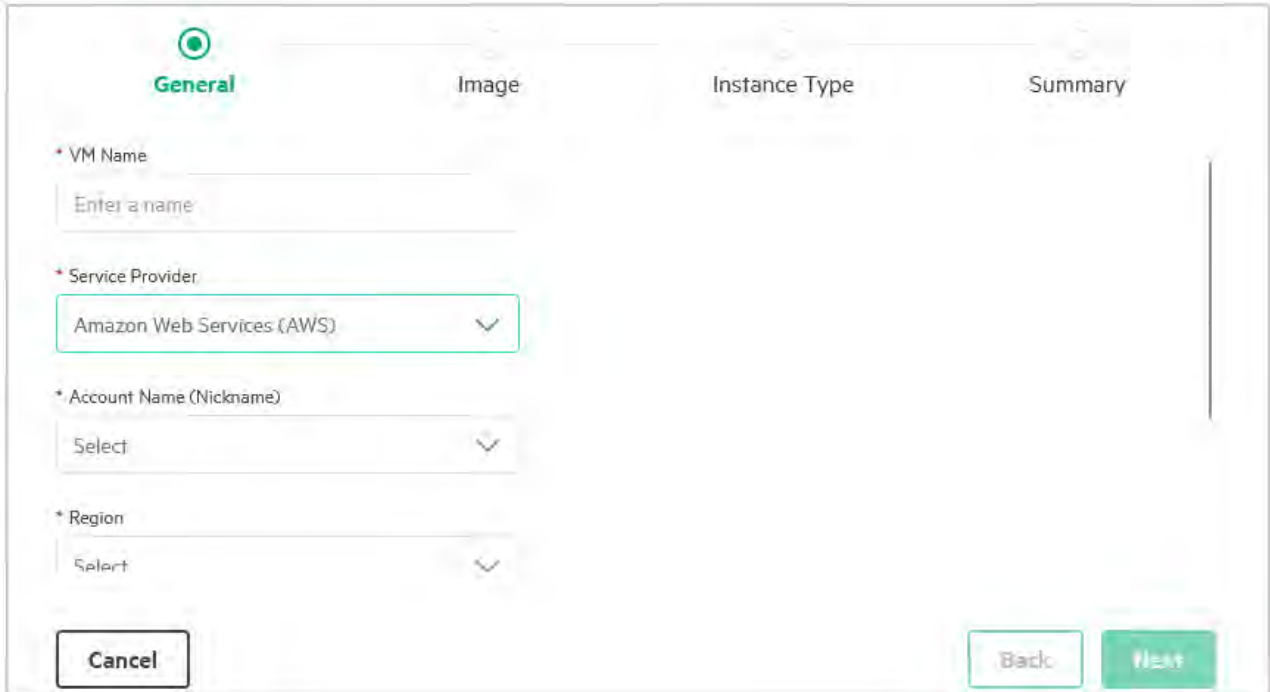
Number of VMs	1
VM Name	1SR-TestVM
Power on VMs created	No
System	rtp-grp-af203
Hypervisor Cluster	Alletra-dHCI-Clst-02
Target Datastore	HPE-VVOL-266a419fe6fb5358b9b02e7822510a69
Template	WIN2016-OVF
Policy	ANewTestPol12345

You can also check on the VM's provision status at the bottom, which will also bring up a window to see the current and pending tasks along with the status and a brief, basic log output from the process.

Creating a Virtual Machine – Public Cloud

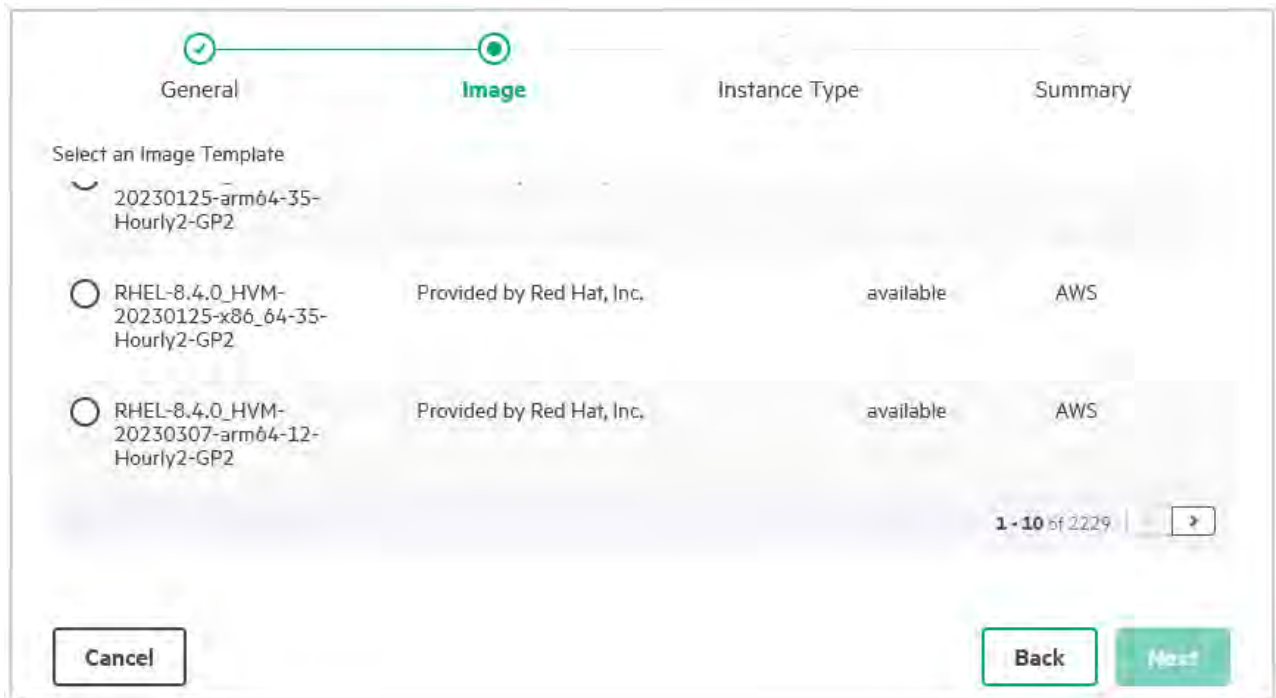
Creating a VM in the Public Cloud is as easy as creating one in the Private Cloud. Click the (+) icon to bring up the creation options window. On the first page are the initial VM options:

- VM Name
- Service Provider (for this review, we tested AWS; Azure is also available)
- Account Nickname – The AWS Account to which this will be attached
- Region
- Key Pair Name – AWS will associate this name with the Public Key generated



The screenshot shows a 'General' tab in a VM creation wizard. The tab is highlighted with a green circle and the word 'General' in green. Below the tab are four sections: 'VM Name' with a text input field containing 'Enter a name'; 'Service Provider' with a dropdown menu showing 'Amazon Web Services (AWS)'; 'Account Name (Nickname)' with a dropdown menu showing 'Select'; and 'Region' with a dropdown menu showing 'Select'. At the bottom left is a 'Cancel' button, and at the bottom right are 'Back' and 'Next' buttons.

After entering the basic information, the following screen will present over 2200 images to select for your Virtual Machine instance.



The final screen is to choose the instance type. The options listed are size, architecture, and if it is available in the AWS Free Tier.

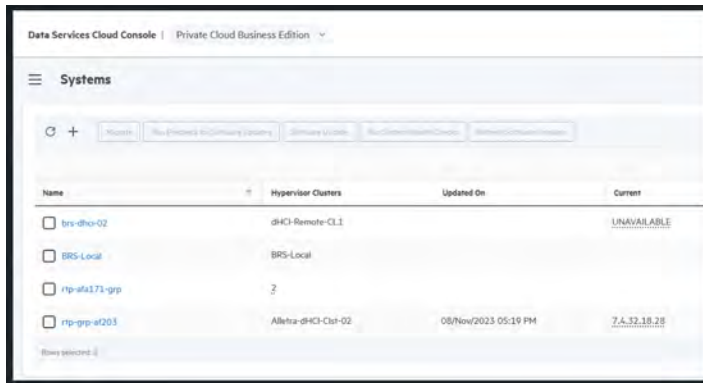
Select a Machine Instance Type

Instance Type	Architecture	Free Tier Eligible
<input type="radio"/> c4.2xlarge	x86_64	No
<input type="radio"/> c4.4xlarge	x86_64	No
<input type="radio"/> c4.8xlarge	x86_64	No

Like the Private Cloud, while the virtual machines are provisioning, you can view the status and all essential log messages generated during the process.

Systems Update

The Systems Update feature allows administrators to non-disruptively update the HPE Alletra Storage Array, ESXi, and server firmware versions for an entire cluster. These updates are executed in the Systems section of the Management Console.



From that section of the Management Console, click on the Software button in the right corner of the Systems list to view software catalogs currently installed in the stack and the available catalog to be updated within the stack.

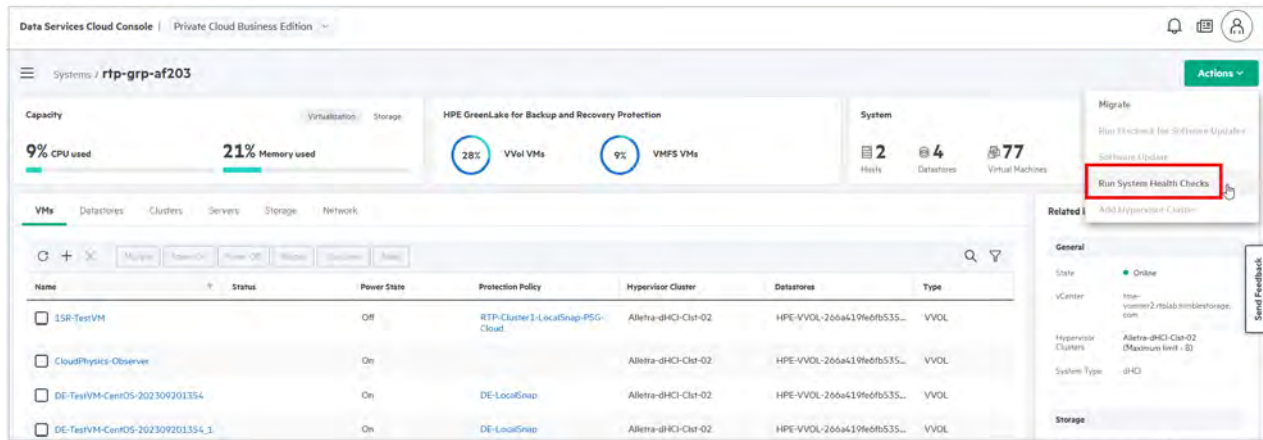
A catalog contains specific Array OS, ESXi, HPE Storage Connection Manager, and Service Pack for ProLiant versions. Individual versions inside the catalog are visible by hovering over the displayed catalog version number in the row of the stack you are looking into.

To begin the upgrade process, select the cluster you want to upgrade and click Run Precheck, or drill down into that system and select Run Precheck from the actions menu. Then, select the destination catalog version to which you want to upgrade the cluster stack.

Once the upgrade begins, it will run through an extensive set of pre-checks to ensure it is prepared and that the upgrade will not cause damage or data loss to the system.

Once complete, you will receive a notification, and the Software Main View will also update its appearance to reflect the changes.

Health Checks



Maintaining and confirming the health of the physical hardware is an imperative responsibility of every Systems Administrator. The Health Checks application provides time-saving automation that ensures applications and infrastructure are operating well and that the cloud environment adheres to best practices. To validate this, HPE GreenLake tasks the system with running checks against approximately 75 rules or configuration guidelines to ensure the infrastructure is operating at optimal health.

As a practical example, if there are path issues to a VM datastore, Health Checks will direct the administrator to the specific host across all clusters with that issue. In this instance, inside the HPE GreenLake portal, the most efficient way to run the necessary Health Checks on the Alletra dHCI Infrastructure stacks is to access the individual system's portal page via the left side menu and select Systems. Once there, choose the specific dHCI stack you want to run a health check on.

Integrations with Data Services Cloud Console Automation

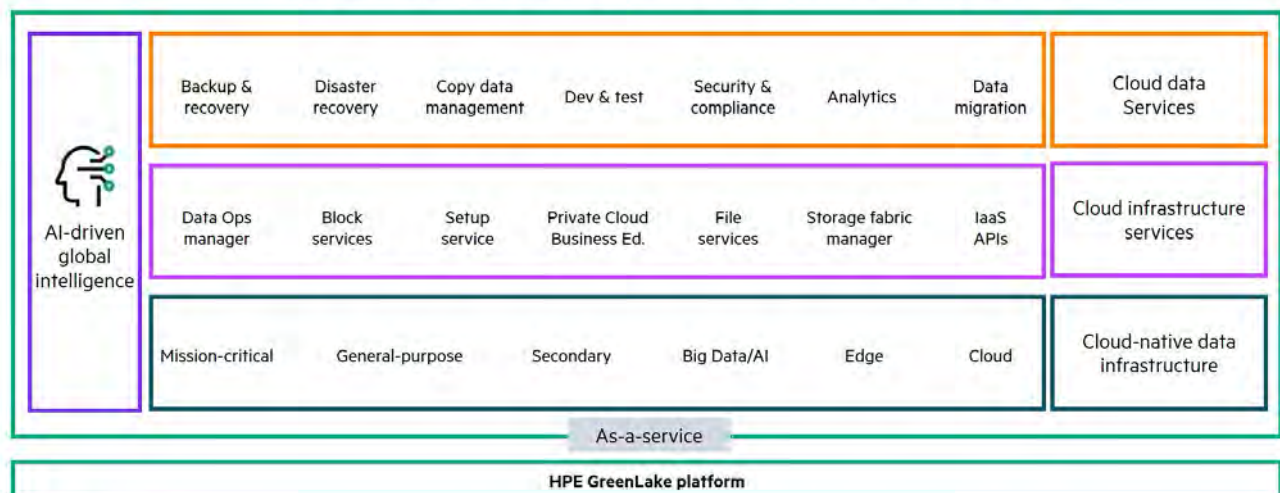
Understanding how HPE GreenLake for Private Cloud Business Edition fits into the HPE Data Services architecture is essential. As shown in the diagram below, the Data Services Cloud Console (DSCC) has multiple layers. Starting at the bottom is the cloud-native data infrastructure layer. This is represented by the on-prem clusters running VMs like HPE Alletra dHCI clusters or HPE SimpliVity clusters, including cloud clusters running in one of the supported hyperscalers.

The middle layer is the Cloud infrastructure services, where Private Cloud Business Edition fits. It also includes services like Setup Service for automating cluster deployments across sites to save time and Data Ops Manager that can be used to configure block services like replication between clusters or analyzing performance to finding storage performance issues.

The top layer is Cloud data services, with examples including HPE GreenLake for Backup and Recovery.

HPE Data Services Cloud Console (DSCC)

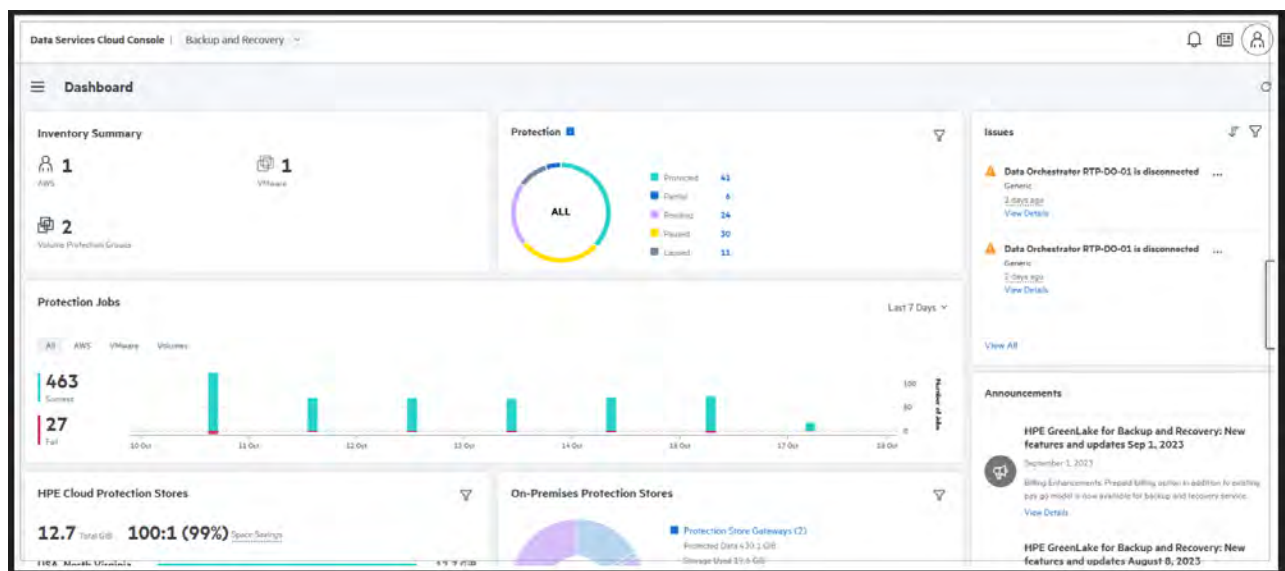
More detailed view of the current and future Data Services Cloud Console deliverables



Backup and Recovery

Every systems engineer knows that backup and recovery are among the most critical administration areas. HPE understands this as well and dedicates an entire portal to the purpose.

The main dashboard provides insight into Inventory Summary, Protection counts and jobs, warnings and issues, and data consumption from backup in both the Cloud and On-Premise.



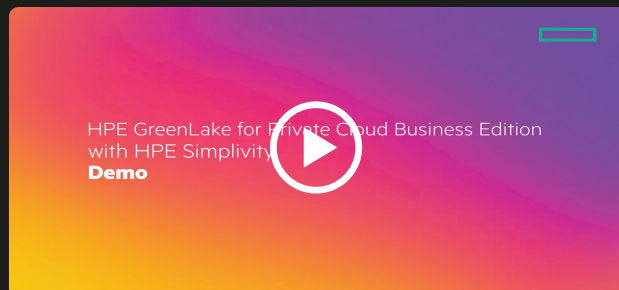
In the left side menu, you are given a wide array of options to manage the backups and policies for all systems managed within HPE GreenLake, including:

- Protection Policies
- Amazon Web Services
 - Elastic Block Store
 - EC2
 - EKS Clusters
 - Relational Database Service
- Microsoft SQL Servers
 - Databases
 - Instances
 - Protection Groups
 - Application Hosts
- VMware
 - Virtual Machines
 - Datastores
 - Protection Groups
 - vCenter Servers
- HPE Array Volumes
- Reports
- On-Premise Setup
 - Data Orchestrators
 - Protection Store Gateways
 - Protection Stores
 - StoreOnce

Final Thoughts

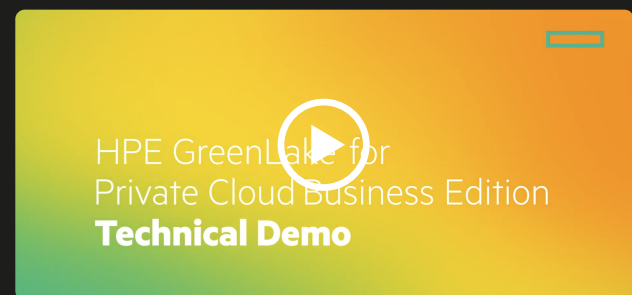
HPE GreenLake for Private Cloud Business Edition, building on HPE GreenLake Cloud Services offers enterprises a tailored hybrid cloud solution. Unlike mainstream providers, namely Amazon Web Services and Microsoft Azure, HPE GreenLake combines the agility of cloud consumption with the control of on-site infrastructure, emphasizing data locality for businesses concerned with compliance and security. It relies on cloud-native data infrastructure comprised of HPE Alletra dHCI for business-critical workloads or HPE SimpliVity for distributed edge sites. It seamlessly integrates with Amazon's EC2 and Microsoft Azure instances. Users benefit from streamlined setup, deployment, VM provisioning, comprehensive backup/recovery tools, and efficient system health checks, ensuring a robust and efficient cloud experience.

* HPE GreenLake rolled out Public Cloud access to Azure Virtual Machines in December. This means you can now create and manage VMs in the Microsoft ecosystem in the same way you currently manage them with AWS EC2.



HPE GreenLake for Private Cloud Business Edition 8-minute demo
3-minute demo

HPE GreenLake for Private Cloud Business Edition Technical Demo



[Learn more about HPE GreenLake for Private Cloud Business Edition >](#)

Frank Morrison, AUTHOR,

Head perpetually in the clouds. After spending 14 years in the military, he dove straight into the deep end of IT Engineering. Since then, he has worked at banks, MSP's, and in various contractor teams. He is fascinated by the advancement of cloud technologies and is here to help guide you through the rapidly changing environments and all the latest players entering the field.



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