

5 Ways to Avoid Hybrid Cloud Management Nightmares

A Guide to IT Success



Running a Hybrid Cloud

Running a hybrid cloud is top of mind for most companies. When done correctly, a hybrid cloud delivers a consistent and agile foundation for your digital business.

With a hybrid cloud, like one built on VMware Cloud Foundation, VMware Cloud on AWS and VMware vRealize Cloud Management, you get consistent infrastructure and consistent operations from the data center, to the cloud, to the edge. You will improve agility, reduce complexity, improve cost, and minimize risk, and deliver a cloud operating model for any application – traditional or container-based.

That sounds great, but it comes with some big questions.

- How can you manage workloads across private cloud, public cloud, and edge environments?
- How do you ensure you are running a cost-efficient hybrid cloud?
- How do you drive the best performance, uptime and compliance for your apps and containers in this new environment?

Proper cloud management is the answer!

Let's take a closer look at the top five management needs for running a hybrid cloud, and how vRealize Cloud Management can solve them for you.

1. Planning your initial hybrid cloud purchase
2. Migrating workloads to the hybrid cloud
3. Deploying workloads in the hybrid cloud
4. Managing ongoing capacity and costs
5. Ensuring the best possible performance



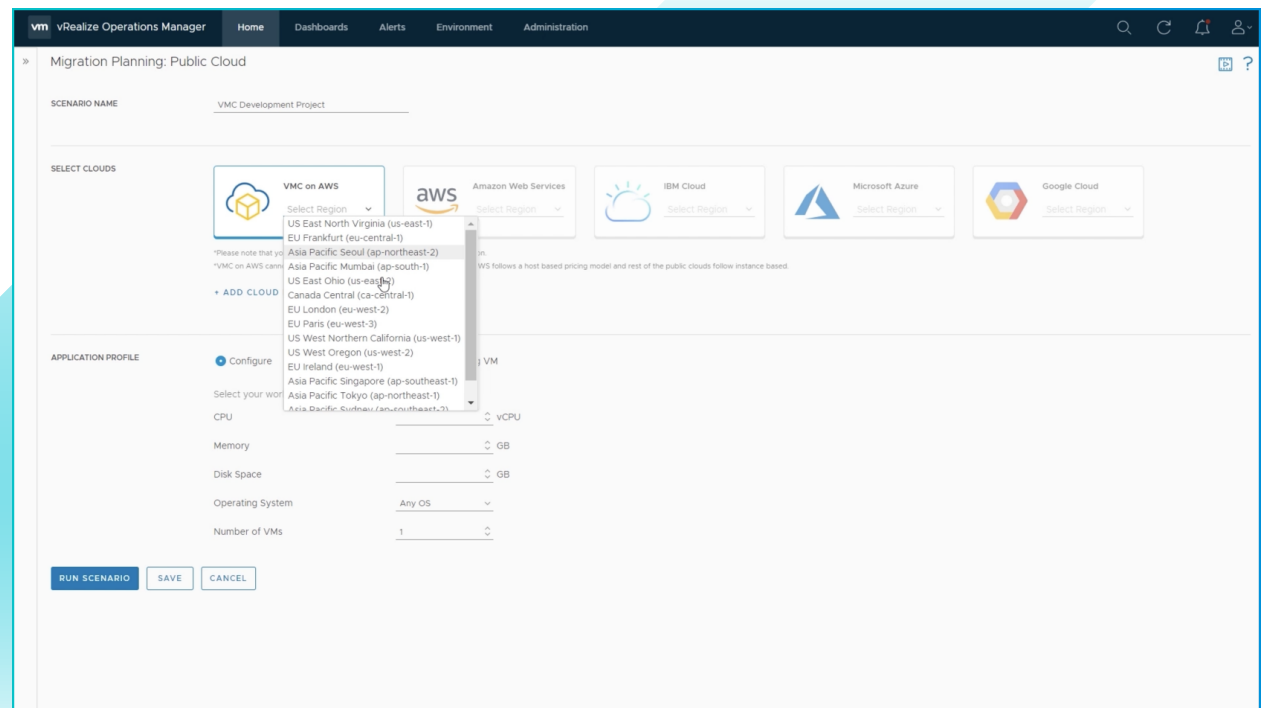
1 Planning your initial hybrid cloud purchase

A hybrid cloud is made up of a combination of owned and rented hardware, so the first thing you need to do is determine how much cloud infrastructure will you need and of which type.

For example, are you taking an approach to your hybrid infrastructure of deploying new workloads in VMware Cloud on AWS for a large development project? Or are you migrating workloads and applications from a private datacenter to the cloud during a hardware refresh?

Or a combination of both, new and migrating?

vRealize Cloud Management's migration planning what-if scenarios allow you to scope your initial and ongoing purchases of VMware Cloud on AWS for either scenario.



Start planning your hybrid cloud with vRealize Operations

How To Get Started

To start, simply name your project and then choose a VMware Cloud on AWS region.

You can configure the resource needed for new workloads or choose to migrate existing ones from your on-premises datacenters, and then run the scenario.

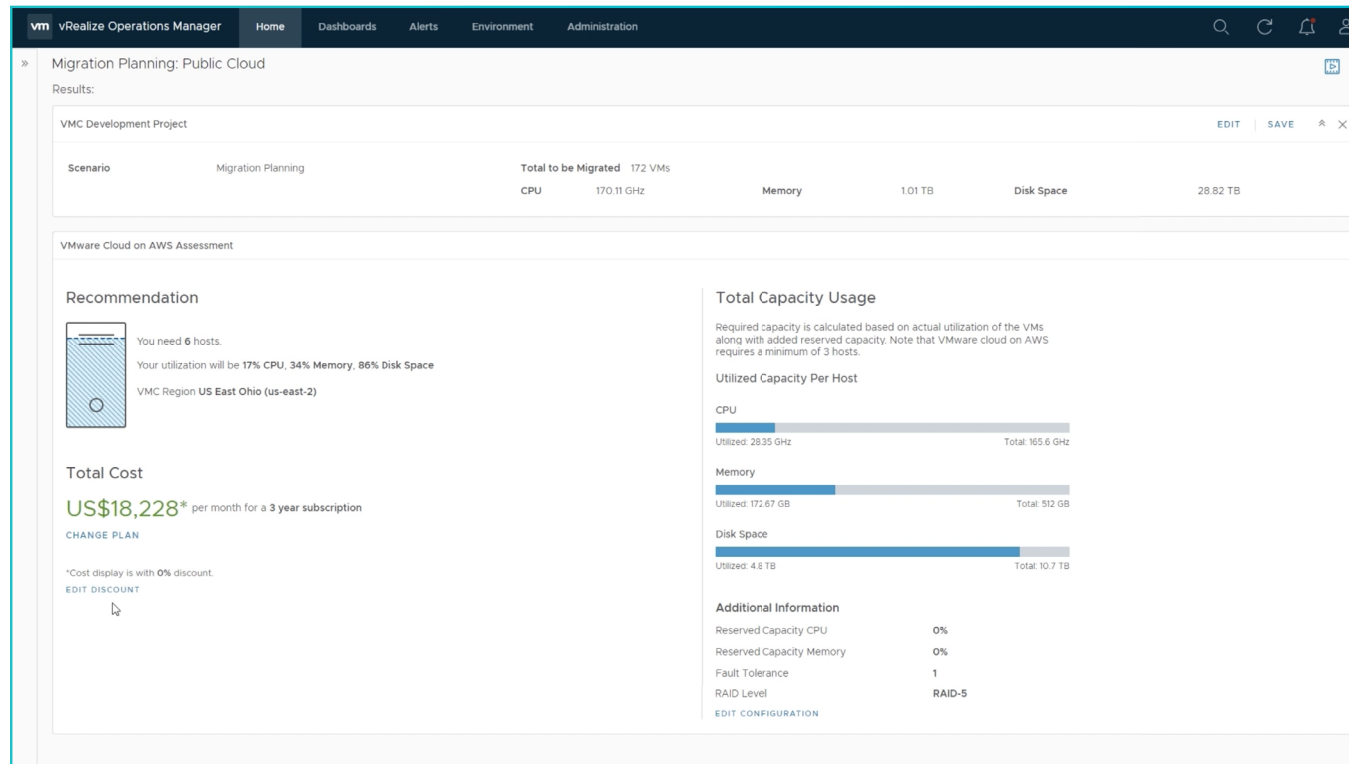


The screenshot shows the 'Migration Planning: Public Cloud' interface in vRealize Operations Manager. The 'SCENARIO NAME' is 'VMC Development Project'. Under 'SELECT CLOUDS', 'VMC on AWS' is selected with the region 'US East Ohio (us-east-2)'. Other cloud providers like Amazon Web Services, IBM Cloud, Microsoft Azure, and Google Cloud are also listed with 'Select Region' dropdowns. A note states: '*Please note that you can select maximum of 3 clouds at a time for comparison. *VMC on AWS cannot be chosen along with other public clouds as VMC on AWS follows a host based pricing model and rest of the public clouds follow instance based.' Below this is a '+ ADD CLOUD PROVIDERS' button. The 'APPLICATION PROFILE' section has two radio buttons: 'Configure' and 'Import from existing VM', with 'Import from existing VM' selected. A description reads: 'Select one or more VMs to perform comparative analysis of private cloud capacity and cost with that of public cloud'. A 'SELECT VMs' button is present. Below, a table lists 'Selected VMs' with columns for VM Name, CPU (Demand), CPU (Allocation), Memory (Demand), Memory (Allocation), Disk Space, and Quantity. The table contains five rows of VM data. At the bottom, there are three buttons: 'RUN SCENARIO', 'SAVE', and 'CANCEL'.

VM Name	CPU (Demand)	CPU (Allocation)	Memory (Demand)	Memory (Allocation)	Disk Space	Quantity
vra-8-01a	145.33 MHz	8 vCPU	3.75 GB	32 GB	262.63 GB	1
wdc-backup-proxy01	32 MHz	4 vCPU	2.8 GB	24 GB	2.36 TB	1
wdc-fd-vrb0-01	72.33 MHz	4 vCPU	6.57 GB	8 GB	156.23 GB	1
wdc-fd-vidm-01	172.13 MHz	2 vCPU	5.12 GB	6 GB	43.38 GB	1
vsan-esxi-07	2.69 GHz	2 vCPU	9.64 GB	24 GB	61.52 GB	1

Choose workloads to migrate to the hybrid cloud and run the scenario with vRealize Operations

Review the results, which will include the number of hosts needed, the cost and any space remaining. From here you can change your subscription plan, add any applicable discounts, and even change your vSAN configurations like reservations, RAID level and fault tolerance.



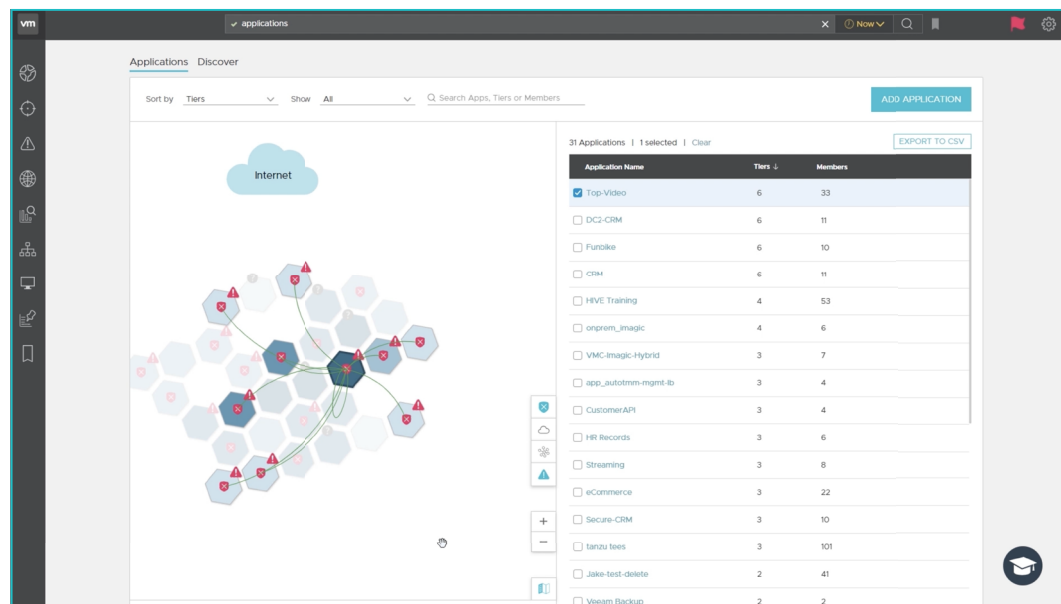
Review hybrid cloud resource needs and costs in vRealize Operations

2 Migrating Workloads to the Hybrid Cloud

After VMware vRealize Cloud Management helps you determine the right amount of hybrid capacity for your business needs, you can start planning app migration. But how do you know what workloads to migrate? How can you safely move your applications and ensure they continue to perform?

How To Get Started

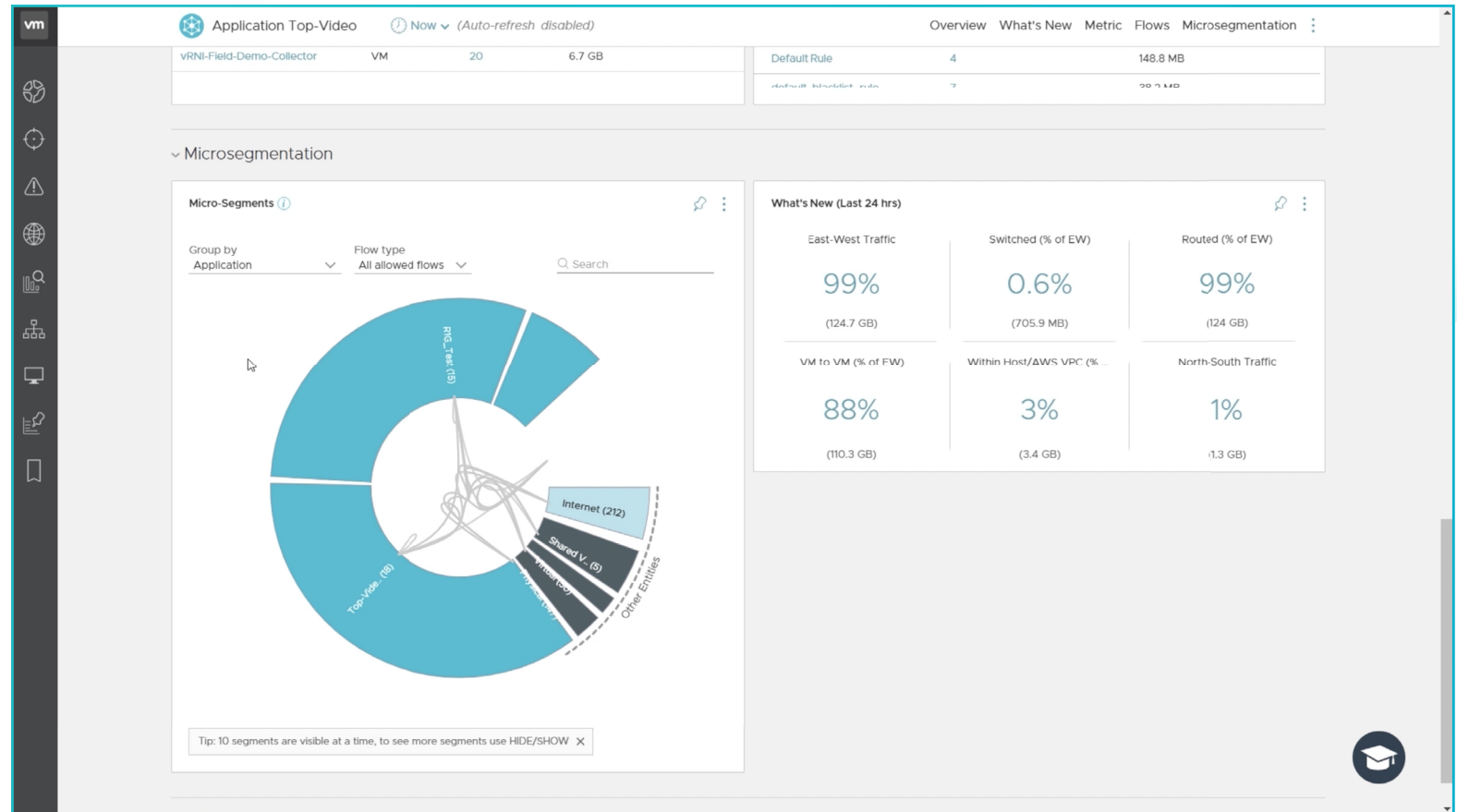
vRealize Cloud Management, with its AI driven flow-based analysis, automatically discovers your applications including connectivity between VMs and services and any connectivity to shared infrastructure or backend systems. This allows you to make intelligent decisions when migrating applications and ensure all the components are taken into consideration.



Automated application discovery with vRealize Network Insight



Detailed traffic visibility between groups of applications, components and networks ensure you have the right connectivity and do not run into network capacity issues for either inter-connections or internet bandwidth.



Review application dependencies with vRealize Network Insight

Once you have determined which workloads you wish to migrate you can automatically create mobility groups in VMware Hybrid Cloud Extension to facilitate seamless app mobility between on premises data centers and VMware Cloud on AWS.

The screenshot displays the VMware HCX Migration Management console. The left sidebar shows the navigation menu with categories like Infrastructure, Services, and Administration. The main panel is titled 'Migration' and has tabs for 'Tracking' and 'Management'. The 'Management' tab is active, showing a table of migration groups and their tasks.

Name	VMs/	Storage/	Memory/	CPU's	Progress	Start	End	
6e0fb504-af04-4d14-bf69-c4f61f90e217 → 92b2022b-4a1c-49ea-830d-ad45cd31e251								
vRNI_hcx-3tierapp								
0 / 3 selected								
GO SCHEDULE ABORT ARCHIVE								
1.	HCX-3TierApp-App01	1 GB	512 MB	1	Migration Complete	08:01 AM Feb 22	08:10 AM Feb 22	Migration completed
2.	HCX-3TierApp-DB01	1 GB	512 MB	1	Migration Complete	08:01 AM Feb 22	08:09 AM Feb 22	Migration completed
3.	HCX-3TierApp-Web01	1 GB	512 MB	1	Migration Complete	08:01 AM Feb 22	08:09 AM Feb 22	Migration completed
vc-south.cmbu.local ← vc-pks.vrni.cmbu.local								
HCX-3TierApp-reverse-01								
0 / 3 selected								
GO SCHEDULE ABORT ARCHIVE								
1.	HCX-3TierApp-App01	1 GB	512 MB	1	Migration Complete	09:54 AM Feb 22	10:03 AM Feb 22	Migration completed
2.	HCX-3TierApp-DB01	1 GB	512 MB	1	Migration Complete	09:54 AM Feb 22	10:03 AM Feb 22	Migration completed
3.	HCX-3TierApp-Web01	1 GB	512 MB	1	Migration Complete	09:54 AM Feb 22	10:04 AM Feb 22	Migration completed

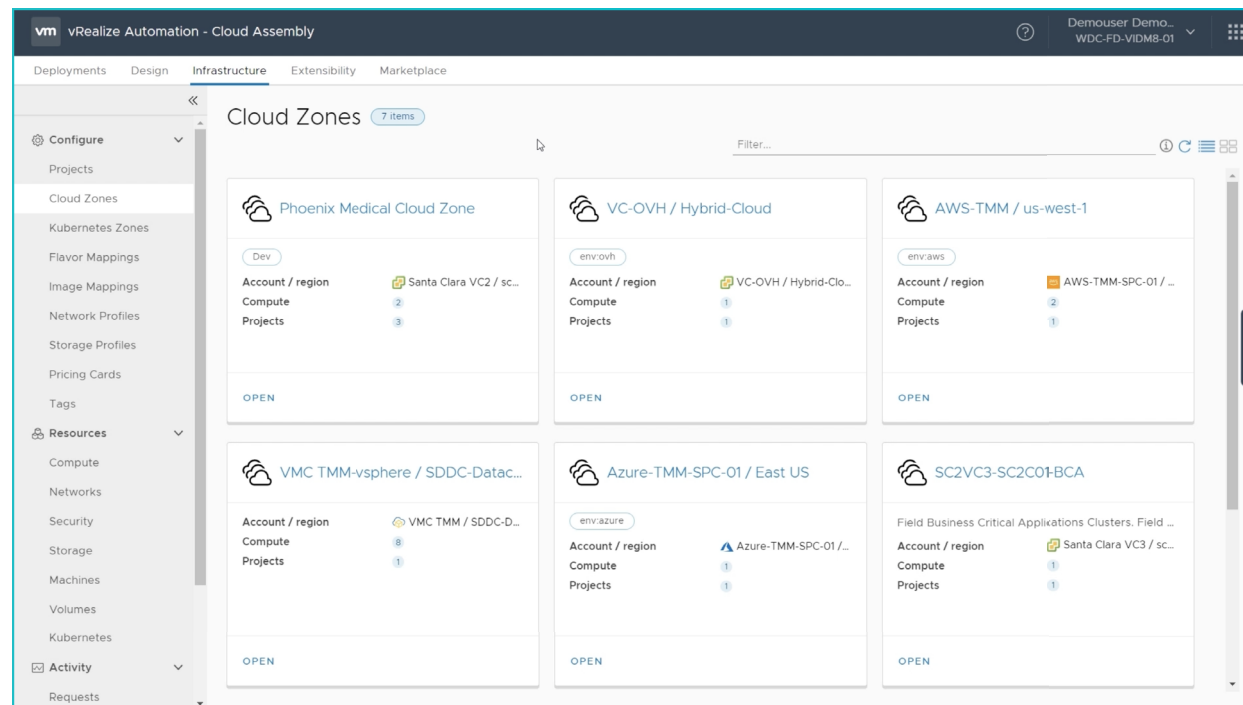
Start migration and verify results with VMware HCX



3 Deploying Workloads in the Hybrid Cloud

So that covers your migration needs, but what if you were looking to take a more greenfield approach to your hybrid cloud?

You can't call your hybrid environment a cloud without a Self-Service Catalog that applies consistent policies and governance for your organization.

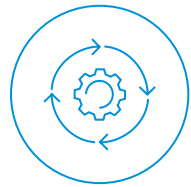


How To Get Started

vRealize Cloud Management provides a rich set of Infrastructure-as-Code capabilities that help Cloud Administrators build out a flexible and modern set of services. Administrators can consume Cloud Zones based on VMware Cloud Foundation, VMware Cloud on AWS or native AWS infrastructure and can customize them with additional infrastructure services such as NSX Networks and Security Groups, or vSAN SPBM Policies and Datastores.

Simplified cloud consumption with vRealize Automation Cloud Zones

Capability tags, Approval Policies and role-based access provide guardrails for the hybrid cloud, while templates provide a way to constrain deployment to the appropriate cluster or datacenter.



vRealize Automation - Cloud Assembly

Deployments Design **Infrastructure** Extensibility Marketplace

Field Demo

Summary Users **Provisioning** Kubernetes Provisioning Integrations

Cloud Zones

Specify the cloud zones that can be used when users provision deployments in this project. ⓘ

Name	Description	Priority	Instances	Memory Limit (MB)	CPU Limit	Storage Limit (GB)	Capability Tags
AWS-TMM / us-...		0	Unlimited	Unlimited	Unlimited	Unlimited	env:aws
VC-OVH / Hybri...		0	Unlimited	Unlimited	Unlimited	Unlimited	env:ovh
Azure-TMM-SP...		0	Unlimited	Unlimited	Unlimited	Unlimited	env:azure
Quickstart Clou...	sc2vc05.cmbu.local / wld01-DC. Created by Quickstart wizard.	0	Unlimited	Unlimited	Unlimited	Unlimited	
SC2VC3-SC2CO...	Field Business Critical Applications Clusters. Field Demo vRA deploys to this vSphere cluster	0	40	Unlimited	Unlimited	Unlimited	
VMC TMM-vsph...		0	100	120000	64	1024	

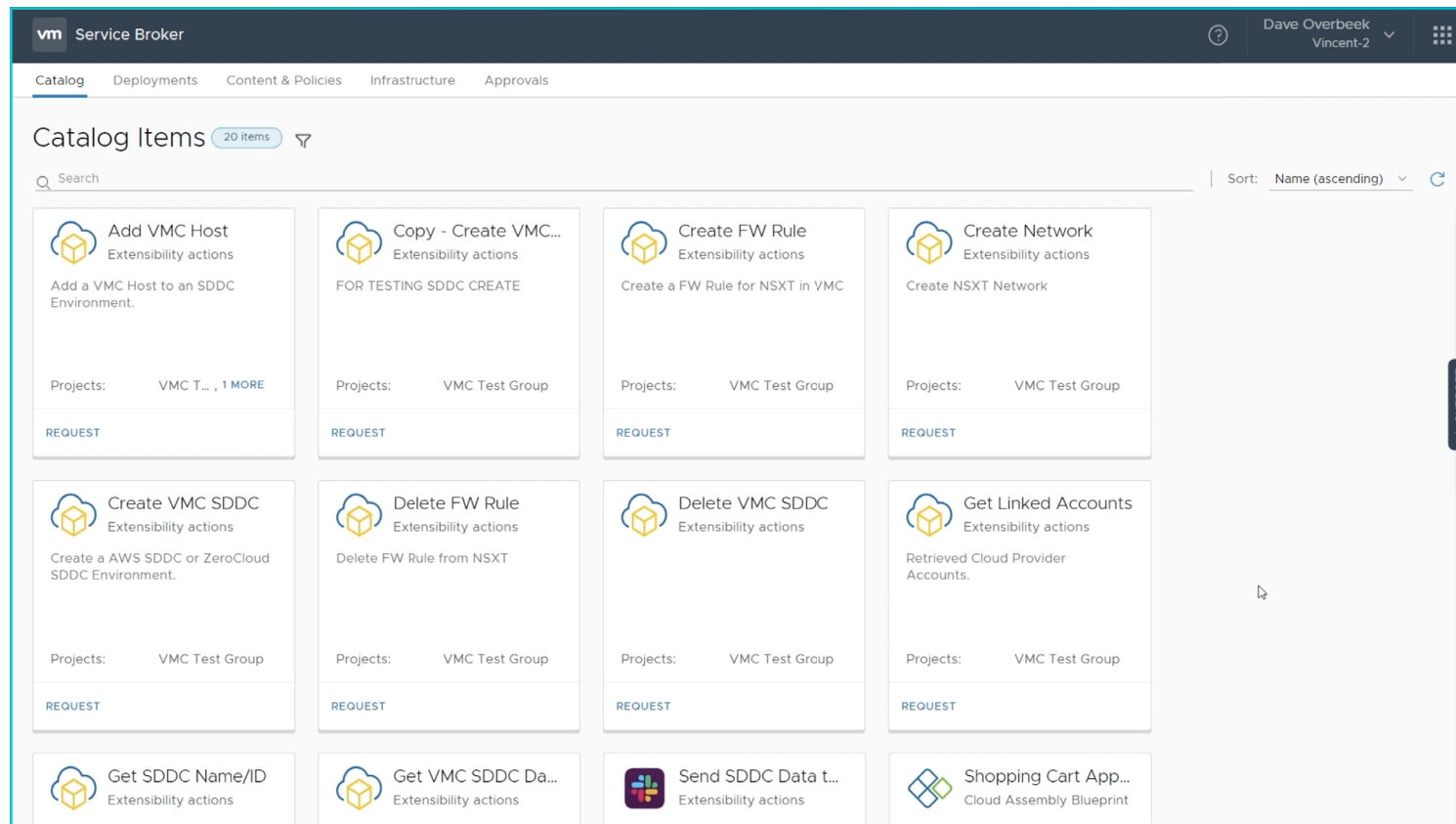
1 - 6 of 6 cloud zones

Resource Tags

Specify the tags to be applied to machines provisioned in this project.

Tagging, guiderails and governance with vRealize Automation

The role-based self-service portal offers developers and other consumers freedom of choice when deploying new workloads. With Agnostic Cloud Templates, consumers experience the same workflow to deploy into any cloud environment: private, hybrid or even public.



Self-service Portal and Cloud Agnostic Templates with vRealize Automation

The portal can be configured with a rich set of custom form actions and dropdowns to provide the user more options for sizing, placement, naming, monitoring and compliance. Users are even provided with an estimated cost at request time for full cost transparency and budgetary purposes.

The screenshot shows the 'New Request' form in the vRealize Service Broker interface. The form is for the 'Shopping Cart App - Hybrid Cloud' (Version 5). It includes fields for Deployment Name, Description, Project, CPU Count, Memory Count, Cluster Size, Image Selection, Hybrid Cloud Selection, Costcenter, Hostname 1, Hostname 2, Enable OS Monitoring, and Compliance. A 'SUBMIT' button and a 'CANCEL' button are at the bottom left. A 'Daily Price Estimate' of \$7.98 is shown at the bottom. A 'SUPPORT' button is on the right side of the form.

Field	Value
Deployment Name *	Shopping Cart App in VMC
Description	This Shopping Cart App is a two tiered application running in VMware Cloud on AWS.
Project *	VMC Users
CPU Count *	4
Memory Count (MB) *	8000
Cluster Size	3
Image Selection *	CentOS
Hybrid Cloud Selection *	VMC
Costcenter *	915
Hostname 1	Shop-Cart-App-Server
Hostname 2	Shop-Cart-DB
Enable OS Monitoring	<input checked="" type="checkbox"/>
Compliance *	PCI

Daily Price Estimate: \$7.98

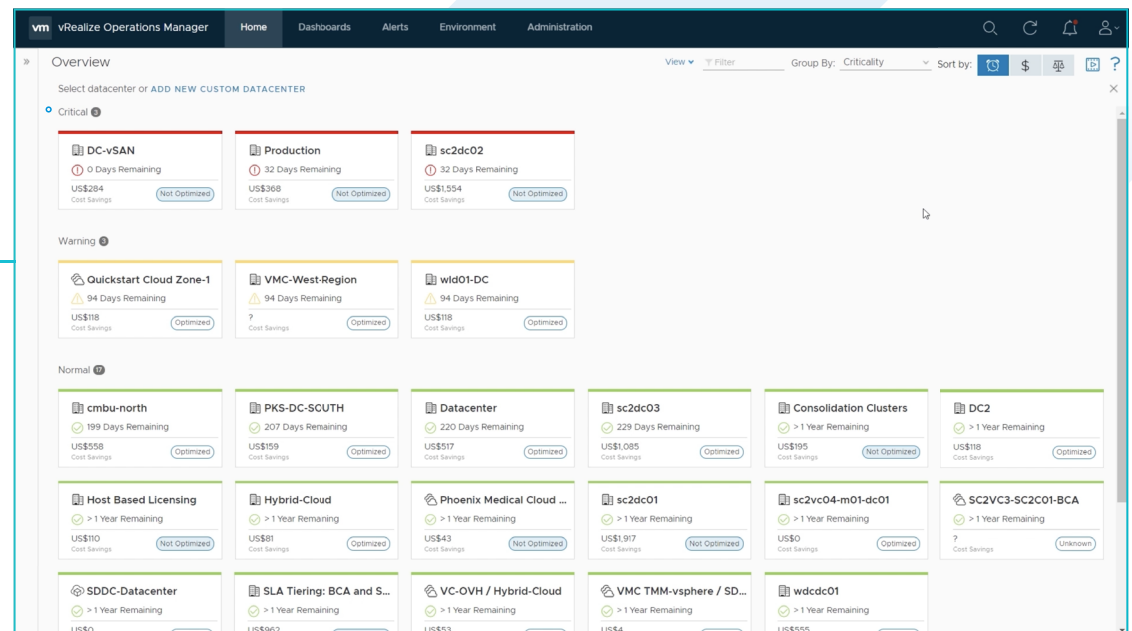
Example of vRealize Automation customizable template

4 Managing Ongoing Capacity and Costs

Speaking of costs, it's important to manage the ongoing capacity and associated costs of your hybrid cloud, and with the AI capacity and costing engine of vRealize Cloud Management you can run the most efficient hybrid cloud possible.

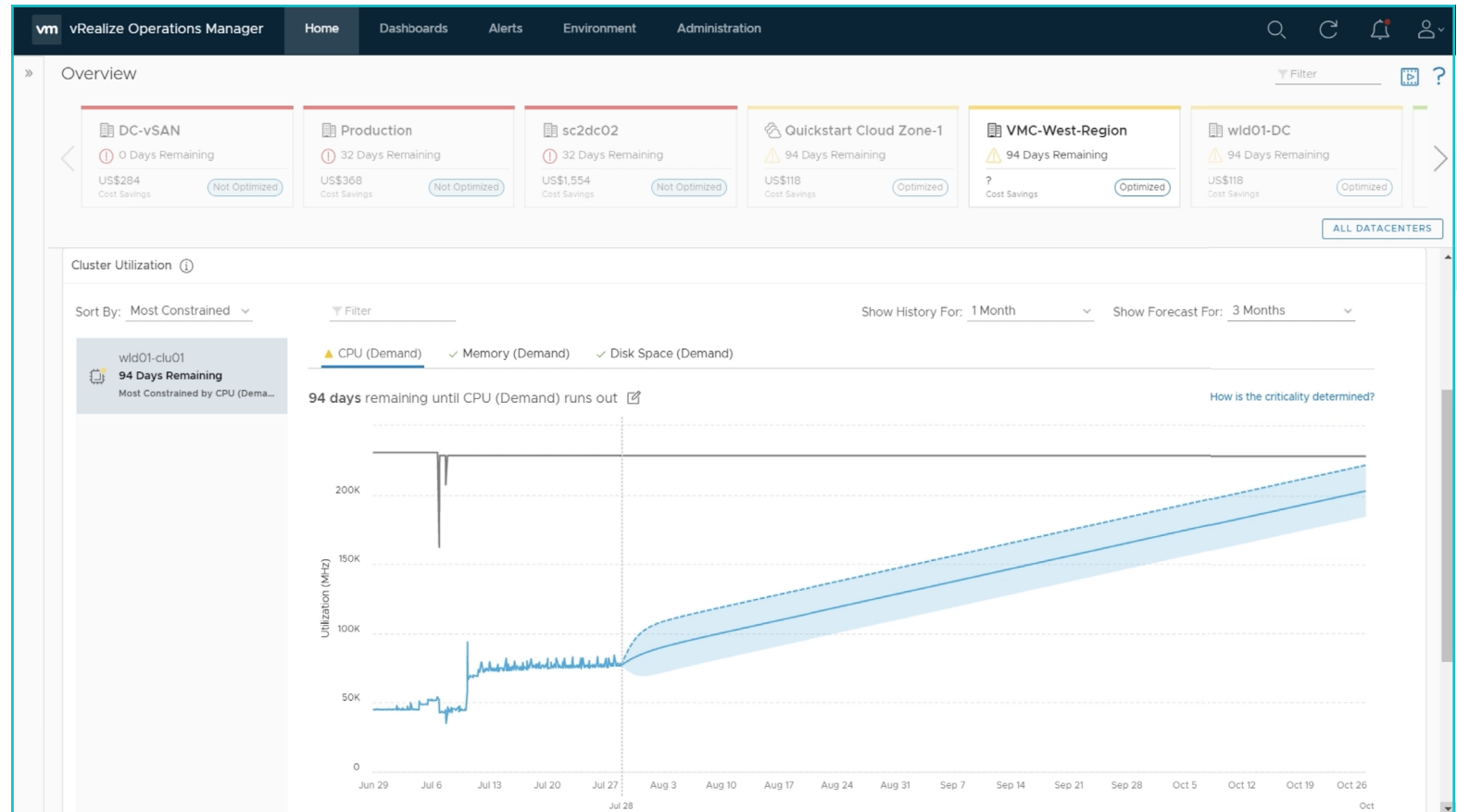
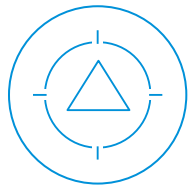
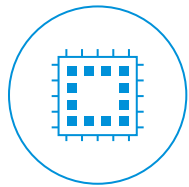
How To Get Started

You can view your current capacity remaining across all your private and hybrid cloud environments from one place.



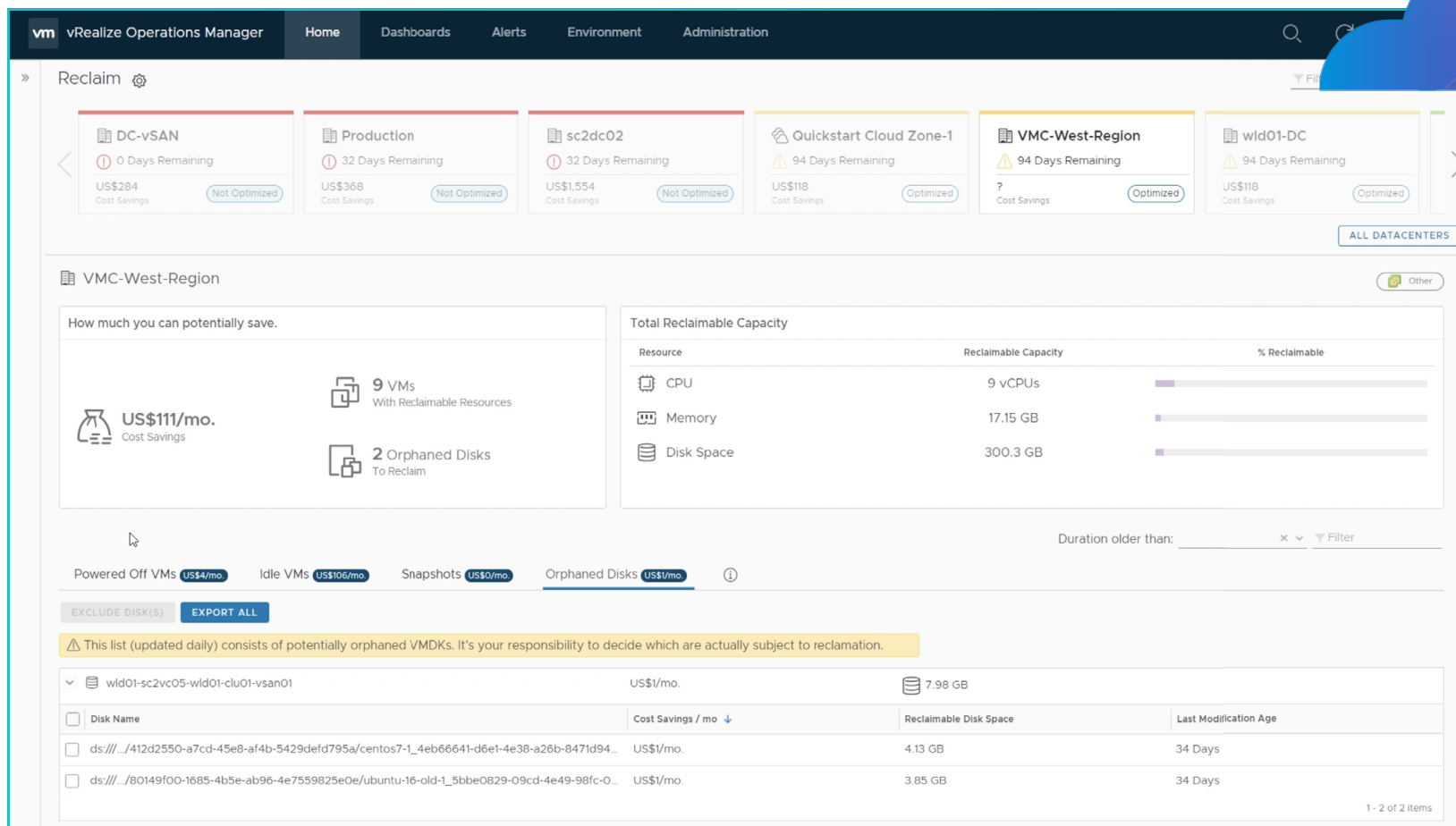
Review datacenter capacity with vRealize Operations

Trending shows the capacity remaining across CPU, memory and storage and alerts can proactively notify you of upcoming capacity shortcomings and recommendations for how much more hardware you need.



AI driving capacity trends with vRealize Operations

Of course, it's not always possible to order new hardware so being able to reclaim unused resources, especially in a hybrid cloud is a must. vRealize Cloud Management allows you to reclaim powered off and idle VMs as well as unneeded snapshots and orphaned disks which saves you capacity and money.



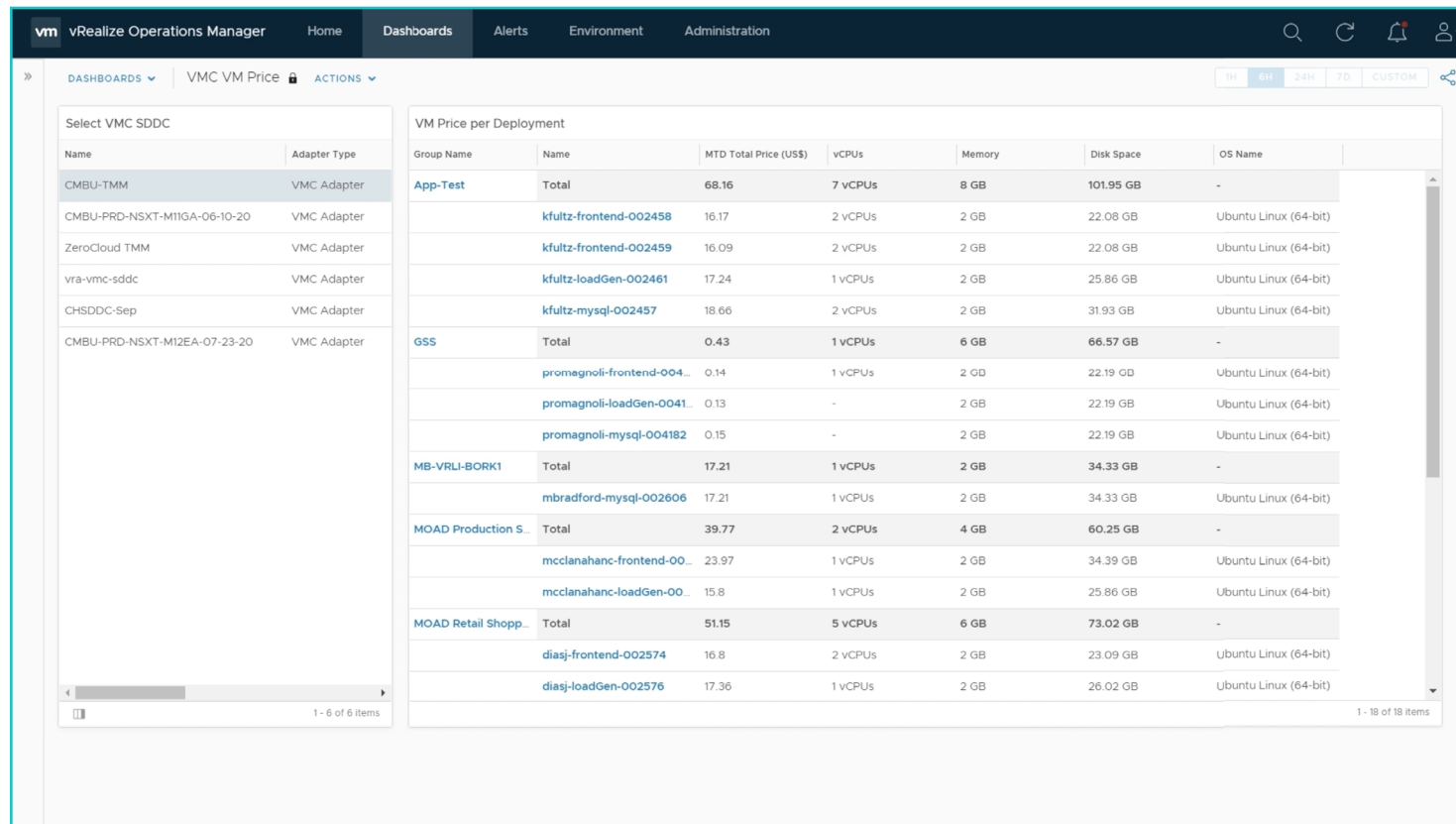
The screenshot shows the vRealize Operations Manager 'Reclaim' interface. The top navigation bar includes 'vm vRealize Operations Manager', 'Home', 'Dashboards', 'Alerts', 'Environment', and 'Administration'. The main content area is titled 'Reclaim' and features a horizontal scrollable list of datacenters with their respective cost savings and optimization status. Below this, the 'VMC-West-Region' is selected, showing a summary of potential savings (\$111/mo) from 9 VMs and 2 orphaned disks. A 'Total Reclaimable Capacity' table lists resources like CPU, Memory, and Disk Space with their reclaimable amounts and percentages. At the bottom, a table lists 'Orphaned Disks' with columns for Disk Name, Cost Savings, Reclaimable Disk Space, and Last Modification Age.

Resource	Reclaimable Capacity	% Reclaimable
CPU	9 vCPUs	
Memory	17.15 GB	
Disk Space	300.3 GB	

Disk Name	Cost Savings / mo	Reclaimable Disk Space	Last Modification Age
ds:///.../412d2550-a7cd-45e8-af4b-5429defd795a/centos7-1_4eb66641-d6e1-4e38-a26b-8471d94...	US\$1/mo.	4.13 GB	34 Days
ds:///.../80149f00-1685-4b5e-ab96-4e7559825e0e/ubuntu-16-old-1_5bbe0829-09cd-4e49-98fc-0...	US\$1/mo.	3.85 GB	34 Days

Reclaim unused resources with vRealize Operations

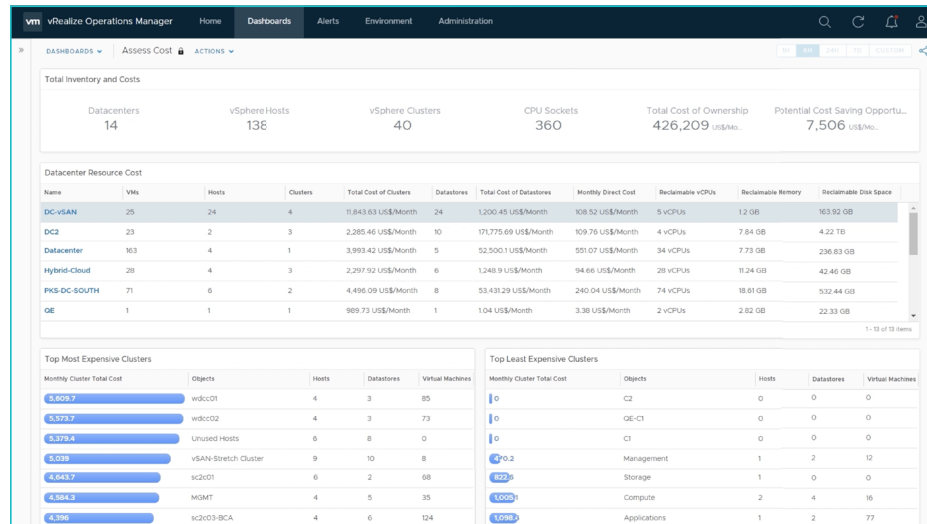
Chargeback reports based on user-defined pricing rate cards are available for your lines of business, so you can run your hybrid cloud like a public cloud.



The screenshot displays the vRealize Operations Manager interface. The top navigation bar includes 'vm vRealize Operations Manager', 'Home', 'Dashboards', 'Alerts', 'Environment', and 'Administration'. The 'Dashboards' tab is active, showing a 'VMC VM Price' dashboard. On the left, a sidebar titled 'Select VMC SDDC' lists several SDDCs with their adapter types. The main content area, titled 'VM Price per Deployment', contains a table with columns: Group Name, Name, MTD Total Price (US\$), vCPUs, Memory, Disk Space, and OS Name. The table is filtered to show 'App-Test' and 'GSS' groups. A large blue dollar sign icon is overlaid on the right side of the image.

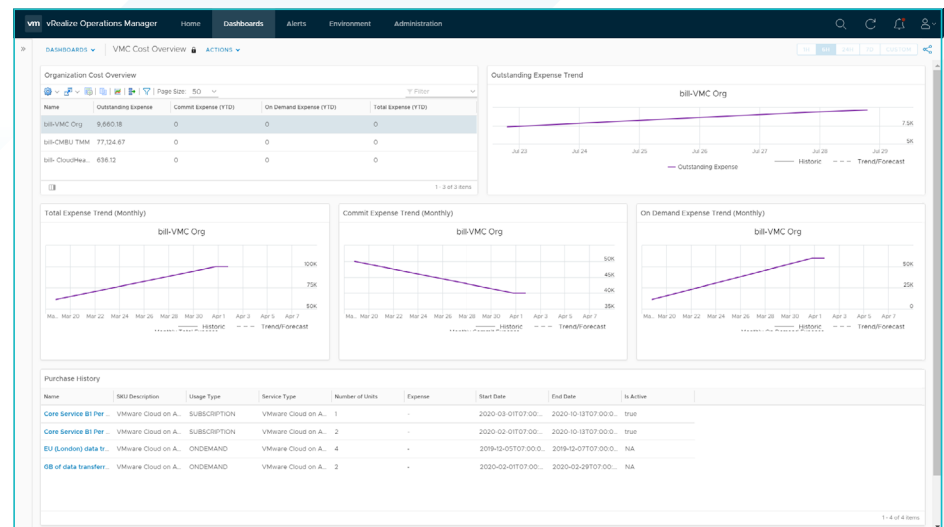
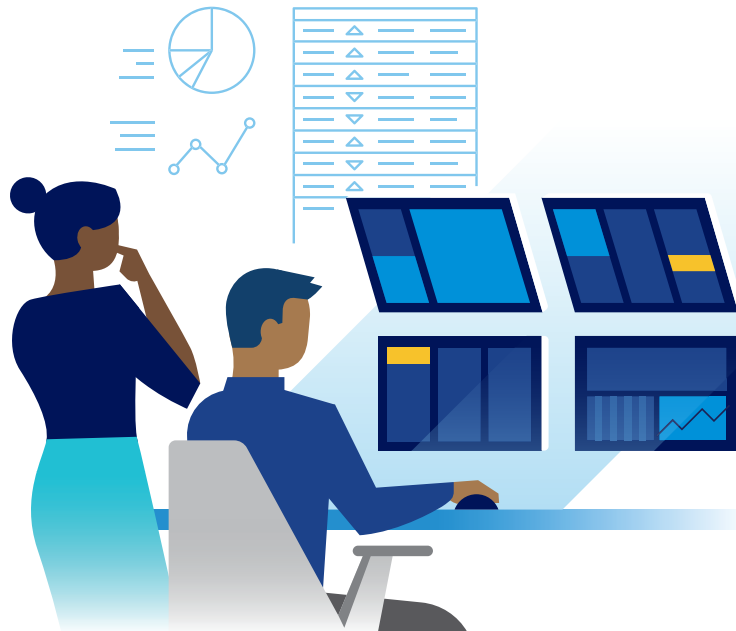
Group Name	Name	MTD Total Price (US\$)	vCPUs	Memory	Disk Space	OS Name
App-Test	Total	68.16	7 vCPUs	8 GB	101.95 GB	-
	kfultz-frontend-002458	16.17	2 vCPUs	2 GB	22.08 GB	Ubuntu Linux (64-bit)
	kfultz-frontend-002459	16.09	2 vCPUs	2 GB	22.08 GB	Ubuntu Linux (64-bit)
	kfultz-loadGen-002461	17.24	1 vCPUs	2 GB	25.86 GB	Ubuntu Linux (64-bit)
	kfultz-mysql-002457	18.66	2 vCPUs	2 GB	31.93 GB	Ubuntu Linux (64-bit)
GSS	Total	0.43	1 vCPUs	6 GB	66.57 GB	-
	promagnoli-frontend-004...	0.14	1 vCPUs	2 GB	22.19 GB	Ubuntu Linux (64-bit)
	promagnoli-loadGen-0041...	0.13	-	2 GB	22.19 GB	Ubuntu Linux (64-bit)
	promagnoli-mysql-004182	0.15	-	2 GB	22.19 GB	Ubuntu Linux (64-bit)
MB-VRLI-BORK1	Total	17.21	1 vCPUs	2 GB	34.33 GB	-
	mbradford-mysql-002606	17.21	1 vCPUs	2 GB	34.33 GB	Ubuntu Linux (64-bit)
MOAD Production S...	Total	39.77	2 vCPUs	4 GB	60.25 GB	-
	mcclanahanc-frontend-00...	23.97	1 vCPUs	2 GB	34.39 GB	Ubuntu Linux (64-bit)
	mcclanahanc-loadGen-00...	15.8	1 vCPUs	2 GB	25.86 GB	Ubuntu Linux (64-bit)
MOAD Retail Shopp...	Total	51.15	5 vCPUs	6 GB	73.02 GB	-
	diasj-frontend-002574	16.8	2 vCPUs	2 GB	23.09 GB	Ubuntu Linux (64-bit)
	diasj-loadGen-002576	17.36	1 vCPUs	2 GB	26.02 GB	Ubuntu Linux (64-bit)

vRealize Operations Chargeback reports



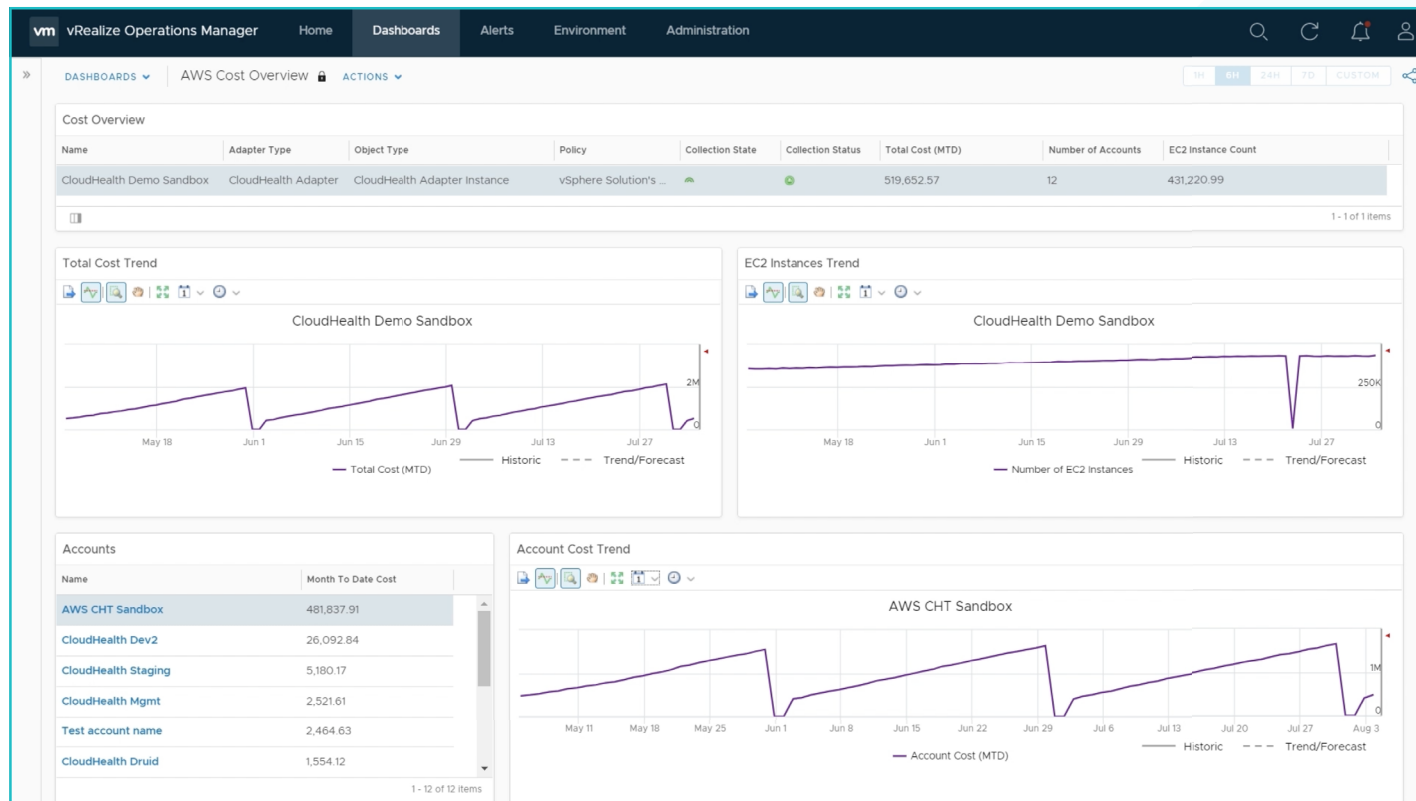
Manage private cloud costs with vRealize Operations

Tracking your costs of your hybrid cloud datacenters is simple through configurable cost drivers, integration of bills from hybrid clouds like VMware Cloud on AWS.



View hybrid cloud costs with vRealize Operations

And if your environment includes native public clouds, you can view those costs through an integration between vRealize and CloudHealth.



Track public cloud costs with vRealize Operations

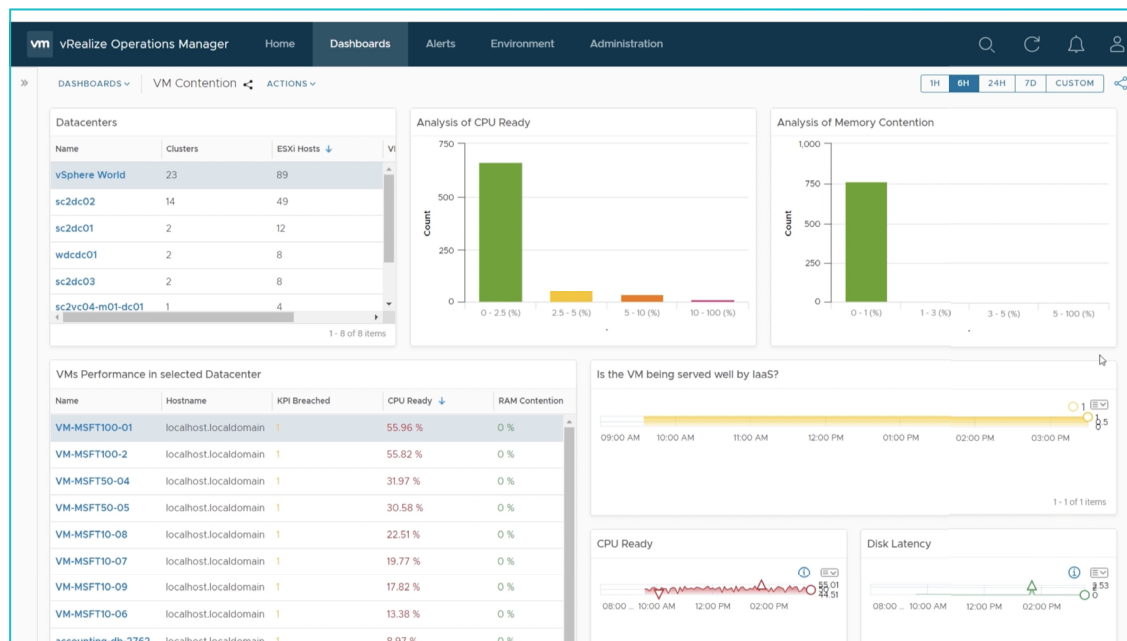
Once all your cloud costing data is brought into vRealize Cloud Management, it can be combined to create any number of custom financial based dashboards, views and reports.

5 Ensuring the Best Possible Performance

The final challenge you will face is to drive the best performance for your applications running across your hybrid cloud.

How To Get Started

vRealize Cloud Management gives you visibility into the performance of the workloads, infrastructure and applications running in your environment. Through out-of-the-box dashboards, for instance, you can view the health of your VMs or containers across CPU, memory, storage and network and look for problems.



Detailed performance analytics with vRealize Operations

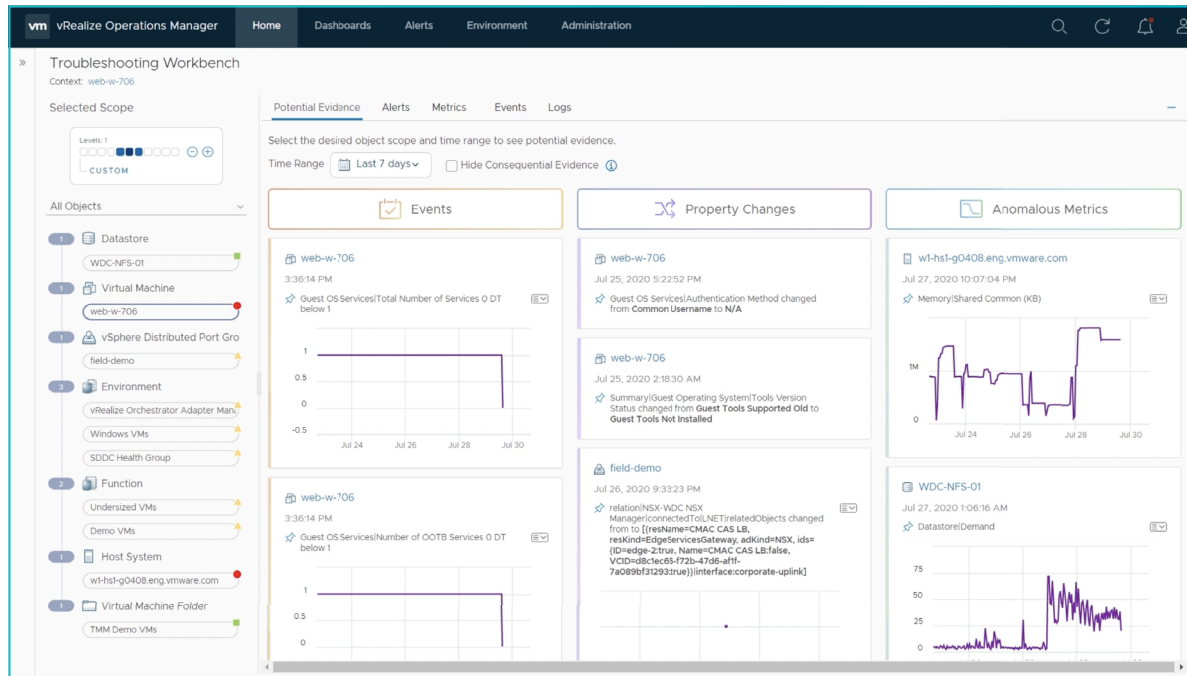


In fact, vRealize Cloud Management is the only solution that allows unified monitoring of both VMs and Kubernetes workloads. It alerts you when performance is degraded and provides possible remediations to bring your applications back into working order.



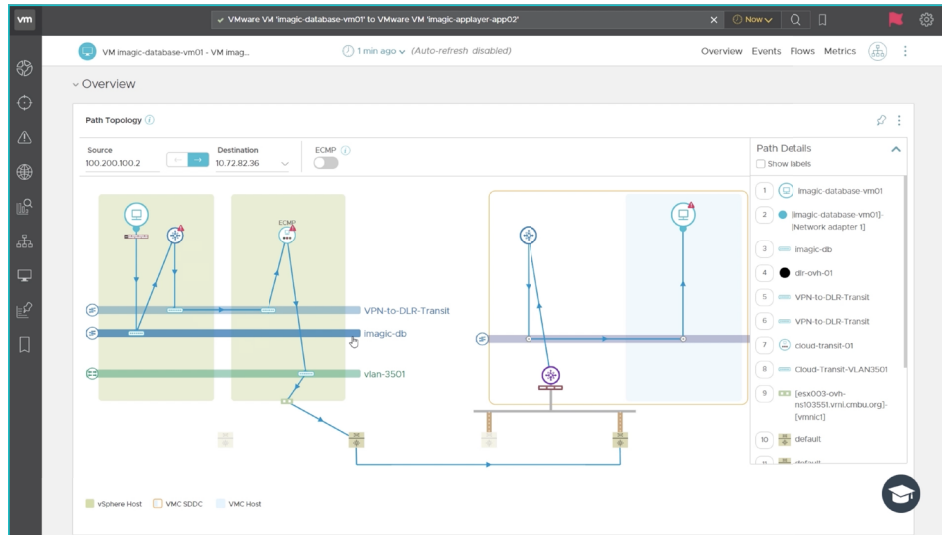
The screenshot displays the vRealize Operations Manager interface. The top navigation bar includes 'vm vRealize Operations Manager', 'Home', 'Dashboards', 'Alerts', 'Environment', and 'Administration'. The main content area is titled 'web-w-706' and includes tabs for 'Summary', 'Alerts', 'Metrics', 'Capacity', 'Compliance', 'Logs', 'Events', and 'more...'. The 'Alerts' tab is active, showing a list of alerts. One alert is visible: 'Virtual machine CPU usage is at 100% for an extended period of time'. The alert details pane on the right shows the alert status as 'Active', the start time as '7/24/20 3:24 PM', and a recommendation to 'Add more CPU Capacity for this virtual machine'. A button labeled 'SET CPU COUNT FOR VM' is highlighted, with a tooltip that says 'Set CPU Count for VM'. The 'Symptoms' section shows 'web-w-706 (Self) has symptom Virtual machine sustained CPU usage is 100%' with a threshold of 100%. The 'Notes' section is empty.

Alerts and Recommendations with vRealize Operations



Solve problems faster with the Troubleshooting Workbench in vRealize Operations

For deeper troubleshooting needs the AI driven Troubleshooting Workbench shows you any events, property changes or anomalous metrics and lets you change the timeframe and the topology scope.

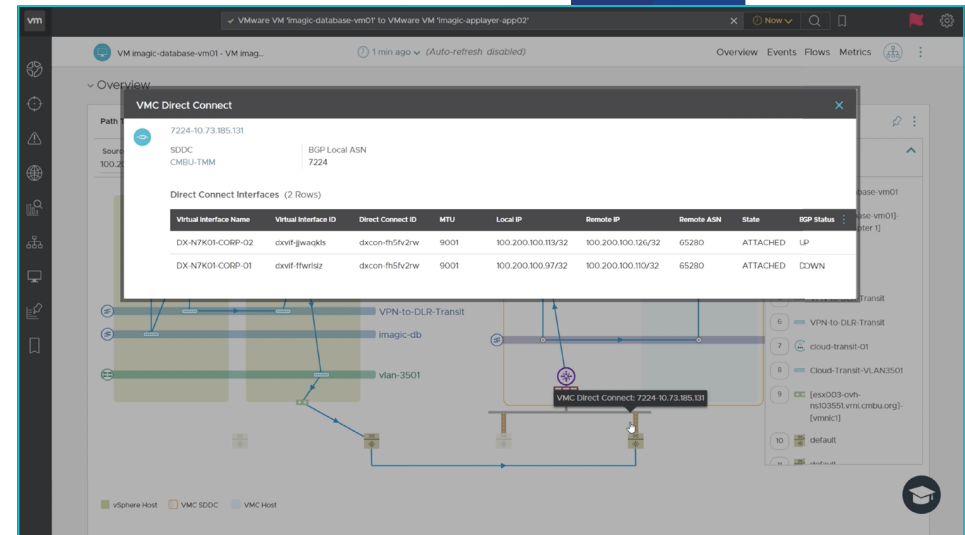


Full network visibility with vRealize Network Insight

Of course, not all problems are performance based, some are full blown outages. Having visibility into the network connections that link your hybrid cloud together and receiving pro-active alerts of any ongoing connectivity issues will let you know when outages occur.

Troubleshooting problems between applications, internet breakout connections, VPN tunnels, Direct Connects, or other connections is simplified with vRealize Cloud Management.

If there's a networking or security issue in your hybrid cloud you will be able to pinpoint it quickly and resolve it.



Hybrid cloud problems shown with vRealize Network Insight

What is VMware vRealize Cloud Management?

VMware vRealize Cloud Management is the intelligent, hybrid cloud management solution empowering you to consistently deploy and operate your apps, infrastructure, and platform services, from the data center to the cloud to the edge. You can accelerate innovation with quick and easy access to services, gain efficiency by improving visibility and automation, and improve control and mitigate risk through unified operations and governance. This helps you modernize IT, promote cloud evolution, and assure developer productivity.

Organizations trust vRealize Cloud Management, the industry leader ranked by IDC,¹ that offers the most comprehensive capabilities for programmable automation and self-driving operations with the ultimate flexibility of deployment and licensing options. With vRealize Cloud Universal, you get on-premises and SaaS capabilities in one license to move to cloud at your own pace while protecting your existing on-premises environment.

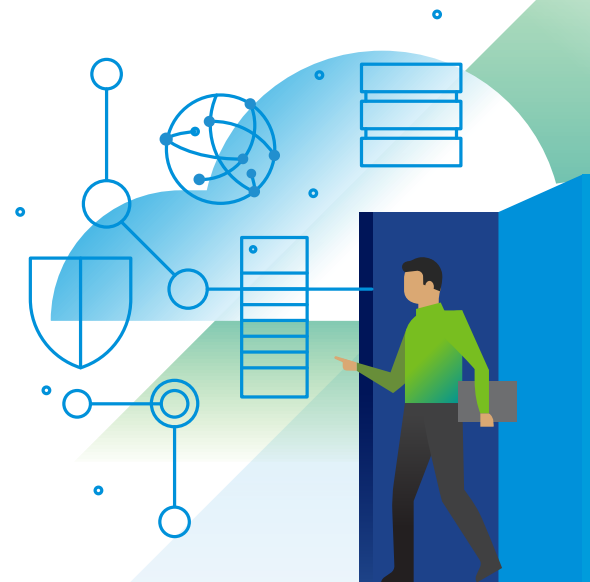
Make Cloud Your Business

With a consistent foundation and powerful management tools, you too can have a cloud operating model that supports containers and applications and works reliably across private, hybrid or public cloud environments.

As recent events have shown, cloud truly delivers. It's time to make cloud your business with VMware vRealize Cloud Management.

Learn more: www.vmware.com/products/vrealize-cloud-management

1. IDC. "Worldwide Cloud System and Service Management Software Market Shares, 2019: SaaS and ITOM Drive Growth," 2019.





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