

Getting Started with vRealize Automation Cloud Assembly

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vRealize Automation 8.7

You can find the most up-to-date technical documentation on the VMware website at:

<https://docs.vmware.com/>

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What is Cloud Assembly

1

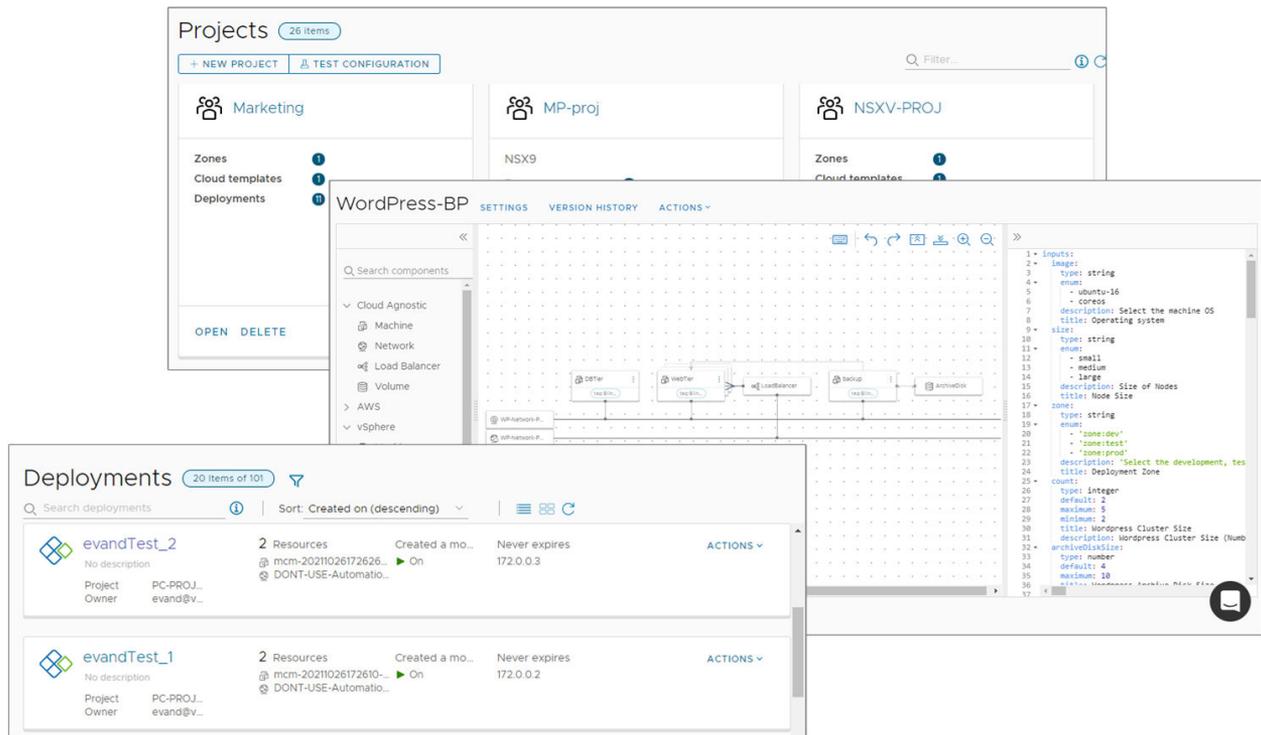
vRealize Automation Cloud Assembly is a cloud-based service that you use to create and deploy machines, applications, and services to your cloud infrastructure.

As a cloud administrator, you can:

- Configure the cloud vendor infrastructure to which your users deploy their cloud templates.
- Set up projects to link the service users with the infrastructure resources.
- Delegate the user management and deployment infrastructure to project managers, freeing you up to focus on your cloud resources.

As a cloud template developer, you can:

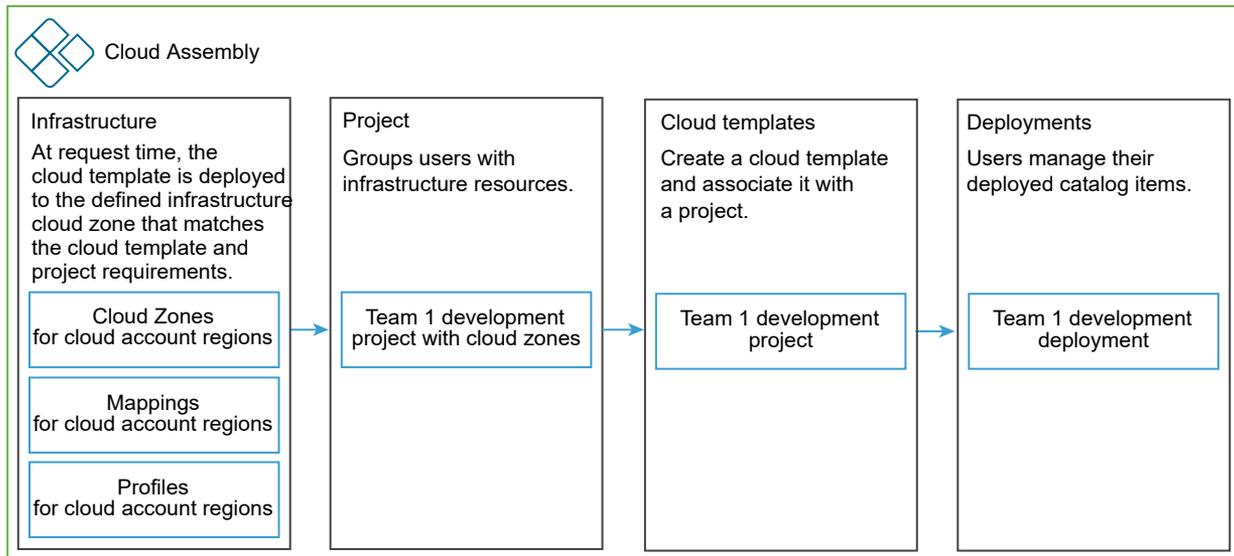
- Create and iterate on templates until they meet your development needs.
- Deploy templates to the supporting cloud vendors based on your project membership.
- Manage the deployed resources throughout the development life cycle.



What does Cloud Assembly do

2

Cloud Assembly provides an automation service where your development teams can iteratively develop and deploy VMware cloud templates to designated cloud vendors.



The primary purpose of Cloud Assembly is to create cloud templates, and then deploy the templates.

As a Cloud Assembly administrator, generally referred to as a cloud administrator, you configure the infrastructure to support template development and deployment. The infrastructure begins with cloud vendors, then you add Cloud Assembly users as project members and link them to the cloud account regions as projects. At this point, you can continue to develop templates, or you can turn over development to the project administrators and members.

As a project member, use Cloud Assembly as you iteratively develop and deploy templates, until you have a production-worthy product. The deployment locations are configured by your cloud administrator as part of the infrastructure. The administrator has the best understanding of your organizations resources and budget.

Before you begin with Cloud Assembly

3

Before you start working in Cloud Assembly as a cloud administrator, you must gather information about your public and private cloud accounts. Use this checklist to help you begin adding your cloud resources.

Before you onboard with Cloud Assembly

To...	You need...
Sign up for and log in to Cloud Assembly	A VMware ID. <ul style="list-style-type: none">■ Set up a My VMware account by using your corporate email address.
Connect to vRealize Automation services	HTTPS port 443 open to outgoing traffic with access through the firewall to: <ul style="list-style-type: none">■ *.vmwareidentity.com■ gaz.csp-vidm-prod.com■ *.vmware.com For more information about ports and protocols, see VMware Ports and Protocols . For more information about ports and protocols, see <i>Port Requirements</i> in the Reference Architecture help.

To...	You need...
Add a vCenter cloud account	<p>Privileges are required for the vSphere agent to manage the vCenter Server instance. Provide an account with the following read and write privileges:</p> <ul style="list-style-type: none"> ■ vCenter IP address or FQDN <p>The permissions needed to manage VMware Cloud on AWS and vCenter cloud accounts are listed. Permissions must be enabled for all clusters in the vCenter Server, not just clusters that host endpoints.</p> <p>For all vCenter Server-based cloud accounts - including NSX-V, NSX-T, vCenter, and VMware Cloud on AWS - the administrator must have vSphere endpoint credentials, or the credentials under which the agent service runs in vCenter, that provide administrative access to the host vCenter Server.</p> <p>For more information about vSphere agent requirements, see VMware vSphere product documentation.</p> <ul style="list-style-type: none"> ■ Datastore <ul style="list-style-type: none"> ■ Allocate space ■ Browse datastore ■ Low level file operations ■ Datastore Cluster <ul style="list-style-type: none"> ■ Configure a datastore cluster ■ Folder <ul style="list-style-type: none"> ■ Create folder ■ Delete folder ■ Global <ul style="list-style-type: none"> ■ Manage custom attributes ■ Set custom attribute ■ Network <ul style="list-style-type: none"> ■ Assign network ■ Permissions <ul style="list-style-type: none"> ■ Modify permission ■ Resource <ul style="list-style-type: none"> ■ Assign VM to Res Pool ■ Migrate powered off virtual machine ■ Migrate powered on virtual machine ■ Profile-driven storage <ul style="list-style-type: none"> ■ Profile-driven storage view <p>To return a list of storage policies that can be mapped to a storage profile, grant the StorageProfile.View privilege to all accounts that connect vRealize Automation to vCenter Server.</p> ■ Content Library <p>To assign a privilege on a content library, an administrator must grant the privilege to the user as a global privilege. For related information, see Hierarchical Inheritance of Permissions for Content Libraries in <i>vSphere Virtual Machine Administration</i> at VMware vSphere Documentation.</p> <ul style="list-style-type: none"> ■ Add library item ■ Create local library ■ Create subscribed library ■ Delete library item

To...	You need...
	<ul style="list-style-type: none"> ■ Delete local library ■ Delete subscribed library ■ Download files ■ Evict library item ■ Probe subscription information ■ Read storage ■ Sync library item ■ Sync subscribed library ■ Type introspection ■ Update configuration settings ■ Update files ■ Update library ■ Update library item ■ Update local library ■ Update subscribed library ■ View configuration settings
	<ul style="list-style-type: none"> ■ vSphere Tagging <ul style="list-style-type: none"> ■ Assign or unassign vSphere tag ■ Assign or unassign vSphere tag on object ■ Create a vSphere tag ■ Create a vSphere tag category ■ Delete vSphere tag ■ Delete vSphere tag category ■ Edit vSphere tag ■ Edit vSphere tag category ■ Modify UsedBy field or category ■ Modify UsedBy field for tag
	<ul style="list-style-type: none"> ■ vApp <ul style="list-style-type: none"> ■ Import ■ vApp application configuration <p>The vApp.Import application configuration is required for OVF templates and to provision VMs from the content library.</p> <p>The vApp.vApp application configuration is required when using cloud-init for cloud configuration scripting. This setting allows for modification of a vApp's internal structure, such as its product information and properties.</p>
	<ul style="list-style-type: none"> ■ Virtual Machine - Inventory <ul style="list-style-type: none"> ■ Create from existing ■ Create new ■ Move ■ Remove
	<ul style="list-style-type: none"> ■ Virtual Machine - Interaction <ul style="list-style-type: none"> ■ Configure CD media ■ Console interaction ■ Device connection

To...	You need...
	<ul style="list-style-type: none">■ Power off■ Power on■ Reset■ Suspend■ Tools install■ Virtual Machine - Configuration<ul style="list-style-type: none">■ Add existing disk■ Add new■ Remove disk■ Advanced■ Change CPU count■ Change resource■ Extend virtual disk■ Disk change tracking■ Memory■ Modify device settings■ Rename■ Set annotation■ Settings■ Swapfile placement■ Virtual Machine - Provisioning<ul style="list-style-type: none">■ Customize■ Clone template■ Clone virtual machine■ Deploy template■ Read customization specs■ Virtual Machine - State<ul style="list-style-type: none">■ Create snapshot■ Remove snapshot■ Revert to snapshot

To...	You need...
Add an Amazon Web Services (AWS) cloud account	<p>Provide a power user account with read and write privileges. The user account must be a member of the power access policy (PowerUserAccess) in the AWS Identity and Access Management (IAM) system.</p> <ul style="list-style-type: none"> ■ 20-digit Access Key ID and corresponding Secret Access Key <p>If you are using an external HTTP Internet proxy, it must be configured for IPv4.</p> <p>vRealize Automation actions-based extensibility (ABX) and external IPAM integration may require additional permissions.</p> <p>The following AWS permissions are suggested to allow autoscaling functions:</p> <ul style="list-style-type: none"> ■ Autoscaling actions: <ul style="list-style-type: none"> ■ autoscaling:DescribeAutoScalingInstances ■ autoscaling:AttachInstances ■ autoscaling>DeleteLaunchConfiguration ■ autoscaling:DescribeAutoScalingGroups ■ autoscaling>CreateAutoScalingGroup ■ autoscaling:UpdateAutoScalingGroup ■ autoscaling>DeleteAutoScalingGroup ■ autoscaling:DescribeLoadBalancers ■ Autoscaling resources: <ul style="list-style-type: none"> ■ * <p>Provide all autoscaling resource permissions.</p> <p>The following permissions are required to allow AWS Security Token Service (AWS STS) functions to support temporary, limited-privilege credentials for AWS identity and access:</p> <ul style="list-style-type: none"> ■ AWS STS resources: <ul style="list-style-type: none"> ■ * <p>Provide all STS resource permissions.</p> <p>The following AWS permissions are required to allow EC2 functions:</p> <ul style="list-style-type: none"> ■ EC2 actions: <ul style="list-style-type: none"> ■ ec2:AttachVolume ■ ec2:AuthorizeSecurityGroupIngress ■ ec2>DeleteSubnet ■ ec2>DeleteSnapshot ■ ec2:DescribeInstances ■ ec2>DeleteTags ■ ec2:DescribeRegions ■ ec2:DescribeVolumesModifications ■ ec2>CreateVpc ■ ec2:DescribeSnapshots ■ ec2:DescribeInternetGateways ■ ec2>DeleteVolume ■ ec2:DescribeNetworkInterfaces ■ ec2:StartInstances ■ ec2:DescribeAvailabilityZones

To...	You need...
	<ul style="list-style-type: none"> ■ ec2:CreateInternetGateway ■ ec2:CreateSecurityGroup ■ ec2:DescribeVolumes ■ ec2:CreateSnapshot ■ ec2:ModifyInstanceAttribute ■ ec2:DescribeRouteTables ■ ec2:DescribeInstanceTypes ■ ec2:DescribeInstanceTypeOfferings ■ ec2:DescribeInstanceStatus ■ ec2:DetachVolume ■ ec2:RebootInstances ■ ec2:AuthorizeSecurityGroupEgress ■ ec2:ModifyVolume ■ ec2:TerminateInstances ■ ec2:DescribeSpotFleetRequestHistory ■ ec2:DescribeTags ■ ec2:CreateTags ■ ec2:RunInstances ■ ec2:DescribeNatGateways ■ ec2:StopInstances ■ ec2:DescribeSecurityGroups ■ ec2:CreateVolume ■ ec2:DescribeSpotFleetRequests ■ ec2:DescribeImages ■ ec2:DescribeVpcs ■ ec2>DeleteSecurityGroup ■ ec2>DeleteVpc ■ ec2:CreateSubnet ■ ec2:DescribeSubnets ■ ec2:RequestSpotFleet
	<hr/> <p>Note The SpotFleet request permission is not required for vRealize Automation actions-based extensibility (ABX) or external IPAM integrations.</p> <hr/>
	<ul style="list-style-type: none"> ■ EC2 resources: <ul style="list-style-type: none"> ■ * <p>Provide all EC2 resource permissions.</p> <p>The following AWS permissions are required to allow elastic load balancing functions:</p> <ul style="list-style-type: none"> ■ Load balancer actions: <ul style="list-style-type: none"> ■ elasticloadbalancing>DeleteLoadBalancer ■ elasticloadbalancing:DescribeLoadBalancers ■ elasticloadbalancing:RemoveTags ■ elasticloadbalancing>CreateLoadBalancer ■ elasticloadbalancing:DescribeTags

To...	You need...
	<ul style="list-style-type: none"> ■ elasticloadbalancing:ConfigureHealthCheck ■ elasticloadbalancing:AddTags ■ elasticloadbalancing>CreateTargetGroup ■ elasticloadbalancing>DeleteLoadBalancerListeners ■ elasticloadbalancing:DeregisterInstancesFromLoadBalancer ■ elasticloadbalancing:RegisterInstancesWithLoadBalancer ■ elasticloadbalancing>CreateLoadBalancerListeners ■ Load balancer resources: <ul style="list-style-type: none"> ■ * <p>Provide all load balancer resource permissions.</p> <p>The following AWS Identity and Access Management (IAM) permissions can be enabled, however they are not required:</p> <ul style="list-style-type: none"> ■ iam:SimulateCustomPolicy ■ iam:GetUser ■ iam:ListUserPolicies ■ iam:GetUserPolicy ■ iam:ListAttachedUserPolicies ■ iam:GetPolicyVersion ■ iam:ListGroupsForUser ■ iam:ListGroupPolicies ■ iam:GetGroupPolicy ■ iam:ListAttachedGroupPolicies ■ iam:ListPolicyVersions

To...	You need...
Add a Microsoft Azure cloud account	<p>Configure a Microsoft Azure instance and obtain a valid Microsoft Azure subscription from which you can use the subscription ID.</p> <p>Create an Active Directory application as described in How to: Use the portal to create an Azure AD application and service principal that can access resources in Microsoft Azure product documentation.</p> <p>If you are using an external HTTP Internet proxy, it must be configured for IPv4.</p> <p>Make note of the following information:</p> <ul style="list-style-type: none"> ■ Subscription ID <ul style="list-style-type: none"> Allows you to access to your Microsoft Azure subscriptions. ■ Tenant ID <ul style="list-style-type: none"> The authorization endpoint for the Active Directory applications you create in your Microsoft Azure account. ■ Client application ID <ul style="list-style-type: none"> Provides access to Microsoft Active Directory in your Microsoft Azure individual account. ■ Client application secret key <ul style="list-style-type: none"> The unique secret key generated to pair with your client application ID. <p>The following permissions are needed for creating and validating Microsoft Azure cloud accounts:</p> <ul style="list-style-type: none"> ■ Microsoft Compute <ul style="list-style-type: none"> ■ Microsoft.Compute/virtualMachines/extensions/write ■ Microsoft.Compute/virtualMachines/extensions/read ■ Microsoft.Compute/virtualMachines/extensions/delete ■ Microsoft.Compute/virtualMachines/deallocate/action ■ Microsoft.Compute/virtualMachines/delete ■ Microsoft.Compute/virtualMachines/powerOff/action ■ Microsoft.Compute/virtualMachines/read ■ Microsoft.Compute/virtualMachines/restart/action ■ Microsoft.Compute/virtualMachines/start/action ■ Microsoft.Compute/virtualMachines/write ■ Microsoft.Compute/availabilitySets/write ■ Microsoft.Compute/availabilitySets/read ■ Microsoft.Compute/availabilitySets/delete ■ Microsoft.Compute/disks/delete ■ Microsoft.Compute/disks/read ■ Microsoft.Compute/disks/write ■ Microsoft Network <ul style="list-style-type: none"> ■ Microsoft.Network/loadBalancers/backendAddressPools/join/action ■ Microsoft.Network/loadBalancers/delete ■ Microsoft.Network/loadBalancers/read ■ Microsoft.Network/loadBalancers/write ■ Microsoft.Network/networkInterfaces/join/action ■ Microsoft.Network/networkInterfaces/read

To...	You need...
	<ul style="list-style-type: none"> ■ Microsoft.Network/networkInterfaces/write ■ Microsoft.Network/networkInterfaces/delete ■ Microsoft.Network/networkSecurityGroups/join/action ■ Microsoft.Network/networkSecurityGroups/read ■ Microsoft.Network/networkSecurityGroups/write ■ Microsoft.Network/networkSecurityGroups/delete ■ Microsoft.Network/publicIPAddresses/delete ■ Microsoft.Network/publicIPAddresses/join/action ■ Microsoft.Network/publicIPAddresses/read ■ Microsoft.Network/publicIPAddresses/write ■ Microsoft.Network/virtualNetworks/read ■ Microsoft.Network/virtualNetworks/subnets/delete ■ Microsoft.Network/virtualNetworks/subnets/join/action ■ Microsoft.Network/virtualNetworks/subnets/read ■ Microsoft.Network/virtualNetworks/subnets/write ■ Microsoft.Network/virtualNetworks/write ■ Microsoft Resources <ul style="list-style-type: none"> ■ Microsoft.Resources/subscriptions/resourcegroups/delete ■ Microsoft.Resources/subscriptions/resourcegroups/read ■ Microsoft.Resources/subscriptions/resourcegroups/write ■ Microsoft Storage <ul style="list-style-type: none"> ■ Microsoft.Storage/storageAccounts/delete ■ Microsoft.Storage/storageAccounts/listKeys/action ■ Microsoft.Storage/storageAccounts/read ■ Microsoft.Storage/storageAccounts/write ■ Microsoft Web <ul style="list-style-type: none"> ■ Microsoft.Web/sites/read ■ Microsoft.Web/sites/write ■ Microsoft.Web/sites/delete ■ Microsoft.Web/sites/config/read ■ Microsoft.Web/sites/config/write ■ Microsoft.Web/sites/config/list/action ■ Microsoft.Web/sites/publishxml/action ■ Microsoft.Web/serverfarms/write ■ Microsoft.Web/serverfarms/delete ■ Microsoft.Web/sites/hostruntime/functions/keys/read ■ Microsoft.Web/sites/hostruntime/host/read ■ Microsoft.web/sites/functions/masterkey/read <p>If you are using Microsoft Azure with action-based extensibility, the following permissions are required, in addition to the minimal permissions:</p> <ul style="list-style-type: none"> ■ Microsoft.Web/sites/read ■ Microsoft.Web/sites/write ■ Microsoft.Web/sites/delete ■ Microsoft.Web/sites/*/action ■ Microsoft.Web/sites/config/read

To...	You need...
	<ul style="list-style-type: none"> ■ Microsoft.Web/sites/config/write ■ Microsoft.Web/sites/config/list/action ■ Microsoft.Web/sites/publishxml/action ■ Microsoft.Web/serverfarms/write ■ Microsoft.Web/serverfarms/delete ■ Microsoft.Web/sites/hostruntime/functions/keys/read ■ Microsoft.Web/sites/hostruntime/host/read ■ Microsoft.Web/sites/functions/masterkey/read ■ Microsoft.Web/apimanagementaccounts/apis/read ■ Microsoft.Authorization/roleAssignments/read ■ Microsoft.Authorization/roleAssignments/write ■ Microsoft.Authorization/roleAssignments/delete ■ Microsoft.Insights/Components/Read ■ Microsoft.Insights/Components/Write ■ Microsoft.Insights/Components/Query/Read <p>If you are using Microsoft Azure with action-based extensibility with extensions, the following permissions are also needed:</p> <ul style="list-style-type: none"> ■ Microsoft.Compute/virtualMachines/extensions/write ■ Microsoft.Compute/virtualMachines/extensions/read ■ Microsoft.Compute/virtualMachines/extensions/delete <p>For related information about creating a Microsoft Azure cloud account, see Configure Microsoft Azure.</p>

To...	You need...
Add a Google Cloud Platform (GCP) cloud account	<p>The Google Cloud Platform cloud account interacts with the Google Cloud Platform compute engine.</p> <p>The Project Admin and Owner credentials are required for creating and validating Google Cloud Platform cloud accounts.</p> <p>If you are using an external HTTP Internet proxy, it must be configured for IPv4.</p> <p>The compute engine service must be enabled. When creating the cloud account in vRealize Automation, use the service account that was created when the compute engine was initialized.</p> <p>The following compute engine permissions are also needed, depending on the actions that the user can take:</p> <ul style="list-style-type: none"> ■ roles/compute.admin <p>Provides full control of all compute engine resources.</p> ■ roles/iam.serviceAccountUser <p>Provides access to users who manage virtual machine instances that are configured to run as a service account. Grant access to the following resources and services:</p> <ul style="list-style-type: none"> ■ <code>compute.*</code> ■ <code>resourcemanager.projects.get</code> ■ <code>resourcemanager.projects.list</code> ■ <code>serviceusage.quotas.get</code> ■ <code>serviceusage.services.get</code> ■ <code>serviceusage.services.list</code> ■ roles/compute.imageUser <p>Provides permission to list and read images without having other permissions on the image. Granting the <code>compute.imageUser</code> role at the project level gives users the ability to list all images in the project. It also allows users to create resources, such as instances and persistent disks, based on images in the project.</p> <ul style="list-style-type: none"> ■ <code>compute.images.get</code> ■ <code>compute.images.getFromFamily</code> ■ <code>compute.images.list</code> ■ <code>compute.images.useReadOnly</code> ■ <code>resourcemanager.projects.get</code> ■ <code>resourcemanager.projects.list</code> ■ <code>serviceusage.quotas.get</code> ■ <code>serviceusage.services.get</code> ■ <code>serviceusage.services.list</code> ■ roles/compute.instanceAdmin <p>Provides permissions to create, modify, and delete virtual machine instances. This includes permissions to create, modify, and delete disks, and also to configure shielded VMBETA settings.</p> <p>For users that manage virtual machine instances (but not network or security settings or instances that run as service accounts), grant this role to the organization, folder, or project that contains the instances, or to the individual instances.</p>

To...	You need...
	Users that manage virtual machine instances that are configured to run as a service account also need the roles/iam.serviceAccountUser role.
	<ul style="list-style-type: none"> ■ compute.acceleratorTypes ■ compute.addresses.get ■ compute.addresses.list ■ compute.addresses.use ■ compute.autoscalers ■ compute.diskTypes ■ compute.disks.create ■ compute.disks.createSnapshot ■ compute.disks.delete ■ compute.disks.get ■ compute.disks.list ■ compute.disks.resize ■ compute.disks.setLabels ■ compute.disks.update ■ compute.disks.use ■ compute.disks.useReadOnly ■ compute.globalAddresses.get ■ compute.globalAddresses.list ■ compute.globalAddresses.use ■ compute.globalOperations.get ■ compute.globalOperations.list ■ compute.images.get ■ compute.images.getFromFamily ■ compute.images.list ■ compute.images.useReadOnly ■ compute.instanceGroupManagers ■ compute.instanceGroups ■ compute.instanceTemplates ■ compute.instances ■ compute.licenses.get ■ compute.licenses.list ■ compute.machineTypes ■ compute.networkEndpointGroups ■ compute.networks.get ■ compute.networks.list ■ compute.networks.use ■ compute.networks.useExternallp ■ compute.projects.get ■ compute.regionOperations.get ■ compute.regionOperations.list ■ compute.regions ■ compute.reservations.get ■ compute.reservations.list

To...	You need...
	<ul style="list-style-type: none"> ■ compute.subnetworks.get ■ compute.subnetworks.list ■ compute.subnetworks.use ■ compute.subnetworks.useExternalIp ■ compute.targetPools.get ■ compute.targetPools.list ■ compute.zoneOperations.get ■ compute.zoneOperations.list ■ compute.zones ■ resourceManager.projects.get ■ resourceManager.projects.list ■ serviceusage.quotas.get ■ serviceusage.services.get ■ serviceusage.services.list ■ roles/compute.instanceAdmin.v1 <p>Provides full control of compute engine instances, instance groups, disks, snapshots, and images. Also provides read access to all compute engine networking resources.</p> <hr/> <p>Note If you grant a user this role at the instance level, that user cannot create new instances.</p> <hr/> <ul style="list-style-type: none"> ■ compute.acceleratorTypes ■ compute.addresses.get ■ compute.addresses.list ■ compute.addresses.use ■ compute.autoscalers ■ compute.backendBuckets.get ■ compute.backendBuckets.list ■ compute.backendServices.get ■ compute.backendServices.list ■ compute.diskTypes ■ compute.disks ■ compute.firewalls.get ■ compute.firewalls.list ■ compute.forwardingRules.get ■ compute.forwardingRules.list ■ compute.globalAddresses.get ■ compute.globalAddresses.list ■ compute.globalAddresses.use ■ compute.globalForwardingRules.get ■ compute.globalForwardingRules.list ■ compute.globalOperations.get ■ compute.globalOperations.list ■ compute.healthChecks.get ■ compute.healthChecks.list

To...	You need...
	■ compute.httpHealthChecks.get
	■ compute.httpHealthChecks.list
	■ compute.httpsHealthChecks.get
	■ compute.httpsHealthChecks.list
	■ compute.images
	■ compute.instanceGroupManagers
	■ compute.instanceGroups
	■ compute.instanceTemplates
	■ compute.instances
	■ compute.interconnectAttachments.get
	■ compute.interconnectAttachments.list
	■ compute.interconnectLocations
	■ compute.interconnects.get
	■ compute.interconnects.list
	■ compute.licenseCodes
	■ compute.licenses
	■ compute.machineTypes
	■ compute.networkEndpointGroups
	■ compute.networks.get
	■ compute.networks.list
	■ compute.networks.use
	■ compute.networks.useExternalIp
	■ compute.projects.get
	■ compute.projects.setCommonInstanceMetadata
	■ compute.regionBackendServices.get
	■ compute.regionBackendServices.list
	■ compute.regionOperations.get
	■ compute.regionOperations.list
	■ compute.regions
	■ compute.reservations.get
	■ compute.reservations.list
	■ compute.resourcePolicies
	■ compute.routers.get
	■ compute.routers.list
	■ compute.routes.get
	■ compute.routes.list
	■ compute.snapshots
	■ compute.sslCertificates.get
	■ compute.sslCertificates.list
	■ compute.sslPolicies.get
	■ compute.sslPolicies.list
	■ compute.sslPolicies.listAvailableFeatures
	■ compute.subnetworks.get
	■ compute.subnetworks.list
	■ compute.subnetworks.use

To...	You need...
	<ul style="list-style-type: none"> ■ compute.subnetworks.useExternalIp ■ compute.targetHttpProxies.get ■ compute.targetHttpProxies.list ■ compute.targetHttpsProxies.get ■ compute.targetHttpsProxies.list ■ compute.targetInstances.get ■ compute.targetInstances.list ■ compute.targetPools.get ■ compute.targetPools.list ■ compute.targetSslProxies.get ■ compute.targetSslProxies.list ■ compute.targetTcpProxies.get ■ compute.targetTcpProxies.list ■ compute.targetVpnGateways.get ■ compute.targetVpnGateways.list ■ compute.urlMaps.get ■ compute.urlMaps.list ■ compute.vpnTunnels.get ■ compute.vpnTunnels.list ■ compute.zoneOperations.get ■ compute.zoneOperations.list ■ compute.zones ■ resourcemanager.projects.get ■ resourcemanager.projects.list ■ serviceusage.quotas.get ■ serviceusage.services.get ■ serviceusage.services.list
Add an NSX-T cloud account	<p>Provide an account with the following read and write privileges:</p> <ul style="list-style-type: none"> ■ NSX-T IP address or FQDN ■ NSX-T Data Center - Enterprise Administrator role and access credentials <p>Administrators <i>also</i> require access to the vCenter Server as described in the <i>Add a vCenter cloud account</i> section of this table.</p>
Add an NSX-V cloud account	<p>Provide an account with the following read and write privileges:</p> <ul style="list-style-type: none"> ■ NSX-V Enterprise Administrator role and access credentials ■ NSX-V IP address or FQDN <p>Administrators <i>also</i> require access to the vCenter Server as described in the <i>Add a vCenter cloud account</i> section of this table.</p>

To...	You need...
Add a VMware Cloud on AWS (VMC) cloud account	<p>Provide an account with the following read and write privileges:</p> <ul style="list-style-type: none"> ■ The cloudadmin@vmc.local account or any user account in the CloudAdmin group ■ NSX Enterprise Administrator role and access credentials ■ NSX Cloud Admin access to your organization's VMware Cloud on AWS SDDC environment ■ Administrator access to your organization's VMware Cloud on AWS SDDC environment ■ The VMware Cloud on AWS API token for your VMware Cloud on AWS environment in your organization's VMware Cloud on AWS service ■ vCenter IP address or FQDN <p>Administrators <i>also</i> require access to the vCenter Server as described in the <i>Add a vCenter cloud account</i> section of this table.</p> <p>For more information about the permissions needed to create and use VMware Cloud on AWS cloud accounts, see <i>Managing the VMware Cloud on AWS Data Center</i> in VMware Cloud on AWS product documentation.</p>
Integrate with vRealize Operations Manager	<p>Provide a local or non-local login account to vRealize Operations Manager with the following read privileges.</p> <ul style="list-style-type: none"> ■ Adapter Instance vCenter Adapter > VC Adapter Instance for <i>vCenter-FQDN</i> <p>A non-local account might need to be imported first, before you can assign its read-only role.</p>

How do I set up Cloud Assembly

4

To set up and verify your Cloud Assembly instance, you can use a quick start wizard and a guided setup. The wizard asks you to provide values that are used to configure Cloud Assembly and Service Broker. The guided setup provides instructions in a support panel that guide you through a Cloud Assembly configuration process in the user interface.

- [How do I get started with vRealize Automation using the VMware vCenter Server Quickstart](#)

If you are new to vRealize Automation, the Quickstart is a great way to get started. The Quickstart helps you, the cloud administrator, set up your on-premises vCenter Server so that you can provision resources using vRealize Automation, populate the self-service catalog, and deploy your first cloud template to your vSphere instance.

- [How do I get started with vRealize Automation using the VMware Cloud Foundation Quickstart](#)

If you use VMware Cloud Foundation to manage your SDDC, the Quickstart helps you connect it to vRealize Automation so that you can provision resources and then manage the life cycle of those resources.

- [Take me on a tour of vRealize Automation to see what the Quickstart did](#)

If you run the vRealize Automation Quickstart, the wizard configures cloud accounts, some infrastructure, a project, and some cloud templates. It also deploys a cloud template. Follow the steps in this procedure to see what was added. You can also use this tour to learn about some of the Cloud Assembly and Service Broker features.

- [How do I get started with Cloud Assembly using the Guided Setup](#)

To set up and verify your Cloud Assembly instance, you configure the infrastructure based on the cloud accounts, and then you create and deploy cloud templates to ensure that everything is flowing through the system.

How do I get started with vRealize Automation using the VMware vCenter Server Quickstart

If you are new to vRealize Automation, the Quickstart is a great way to get started. The Quickstart helps you, the cloud administrator, set up your on-premises vCenter Server so that you can provision resources using vRealize Automation, populate the self-service catalog, and deploy your first cloud template to your vSphere instance.

Using the vCenter Server Quickstart, you do the following tasks in Cloud Assembly and Service Broker.

- Add a vCenter Server cloud account. Cloud accounts are the credentials that are used to collect data from and deploy resources to your vCenter Server instance.
- Add an NSX-T or NSX-V cloud account and associate it with the vCenter Server account. The NSX cloud accounts are the credentials that are used to create and deploy NSX network resources.
- Select a datacenter. The datacenter is added as a cloud account region.
- Create a sample machine template that you can deploy.
- Create a project. The project links your users with cloud account regions, so that they can deploy application templates with networks and storage resources to your vCenter Server instance.
- Create lease and machine naming policies. The lease policy controls how long a deployment is active. The naming policy provides a standardized naming convention for the resources.
- Add the templates to the catalog.
- Deploy a machine from the catalog.

After you run the Quickstart the first time, the Quickstart is added as a tile on the console services page. You can run it again to add new vCenter Server or Cloud Foundation instances.

Much of this terminology might be new to you. As you go through the Quickstart and the tour, we explain the new concepts in more detail. After you run the Quickstart, use the [Take me on a tour of vRealize Automation to see what the Quickstart did](#) to tour the results.

The Quickstart is not an option under the following circumstances.

- If you do not use vSphere and want to add a different type of cloud account, you can use the Guided Setup as your first-time guide to the process.
- You can only run the Quickstart once. You cannot run it a second time. Consider using the Guided Setup.
- For more about the Guided Setup, see [How do I get started with Cloud Assembly using the Guided Setup](#).

In this procedure, we provide sample values to illustrate the workflow. Substitute these samples with values that are relevant to your environment.

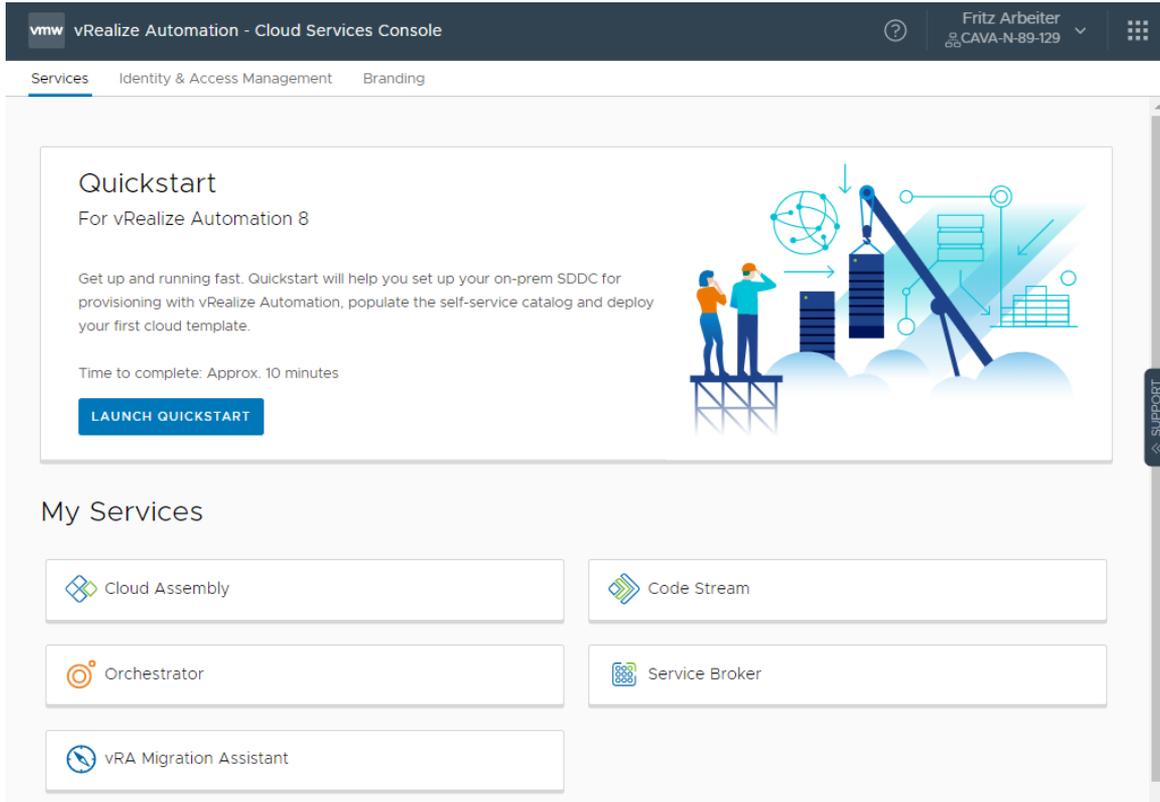
Prerequisites

- Verify that you have the IP address or FQDN for the vCenter Server that you are adding as a cloud account. You must also have the credentials for a vCenter Server user account with the necessary permissions. See the vCenter Server requirements in [Chapter 3 Before you begin with Cloud Assembly](#).

- Verify that you have the IP address or FQDN for the NSX-V or NSX-T instance that you are adding as a cloud account. You must also have the credentials for a user account that has create, read, edit, and delete permission. See the NSX requirements in [Chapter 3 Before you begin with Cloud Assembly](#).

Procedure

- 1 After you install vRealize Automation and log in for the first time, click **Launch Quickstart**.



- 2 On the VMware vCenter Server card, click **Start**.

3 Add your vCenter Server.

Quickstart

1 vCenter Server Add a vCenter Server and enable datacenters for provisioning

Add a new vCenter Server account

vCenter Server IP address/FQDN * server.company.com ⓘ

Username * account.name ⓘ

Password *

VALIDATE

CREATE AND GO TO NEXT STEP

2 NSX Add the NSX Manager that is registered with your vCenter Server instance

3 Content Populate the cloud with VM template images

4 Project Create a project, or select an existing project

Remember that all values here are use case samples. Your account values depend on your environment.

Avoid any beginning or trailing spaces when you enter the values.

- a If you are adding your first account, select **Add a new vCenter Server account**.
If you are adding additional accounts using the wizard, select **Use an existing vCenter Server account**.
- b Enter the address and credentials.
- c Click **Validate**.

If your certificates are not configured, a warning appears regarding the untrusted certificate. You can resolve the trust or you can click **Accept** and continue.

- d After successful validation, select the data centers that you want to deploy to.

1 vCenter Server Add a vCenter Server and enable datacenters for provisioning

Add a new vCenter Server account

vCenter Server IP address/FQDN * nsxt-vc.sqa.local

Username * admin

Password *

VALIDATE

Credentials validated successfully.

Allow provisioning to these datacenters * Datacenter

CREATE AND GO TO NEXT STEP

Each data center is added as an account region cloud zone in vRealize Automation.

- e Click **Create and go to next step**.
- 4 Add the NSX instance that is associated with your vCenter Server.

For this example, the values are for NSX-T.

2 NSX Add the NSX Manager that is registered with your vCenter Server instance

Configuring an NSX instance enables out-of-the-box provider infrastructure as code as well as on-demand network and security services.

NSX Version * NSX-T NSX-V None

NSX-T IP address/FQDN * nsxt-mgr-1.sqa.local

Username * admin

Password *

NSX Mode Policy

VALIDATE AND CREATE

Endpoint created successfully

NEXT STEP

- a Select the NSX version.
Select the NSX version that you use. If you do not have NSX, select **None**.
- b Enter the address and credentials.

- c Select the **NSX Mode** with the capabilities that you want to use to manage the endpoint.
You cannot change the mode after the account is created.
- d Review the information, and then click **Validate and Create**.
- e Click **Next step**.

5 Set up the content of your first templates and where they are deployed.

This process sets up the elements in your infrastructure and creates your first VMware cloud templates that are made available in the Service Broker catalog. The terms that are used in Cloud Assembly and Service Broker are provided so that you become familiar with them and how they are used in the

v 3 Content
Populate the cloud with VM template images

Add content to your cloud. Items added here are used to populate the service catalog.

Datacenter * ⓘ

VM templates

Discovered templates 10 Selected templates 2 SELECT TEMPLATES

Create and deploy your first cloud template

Provide information needed to create a cloud template, add it to the catalog, and deploy it.

Template * ⓘ

Datastore / cluster ⓘ

Network * ⓘ BROWSE

IP assignment type DHCP ⓘ CONFIGURE

Also add sample NSX cloud templates to the catalog

Provide information needed to create a network profile that supports sample NSX on-demand infrastructure cloud templates.

Tier-0 logical router * ⓘ

Edge cluster * ⓘ

NEXT STEP

UI.

- a Click in the text box to select the **Datacenter**.

The other possible values on this page are collected from your vCenter Server instance based on the provided credentials. This data center becomes a cloud zone in Cloud Assembly.

- b To add one or more templates that exist on your vCenter Server to your catalog, select **VM templates** and select the templates.

These templates are virtual machine templates on your vCenter Server instance.

- c To deploy a template, click **Select Templates** and locate the template that you want to deploy.

- d Select the **Datastore / cluster**.

This datastore becomes a storage profile.

- e To add a **Network**, click **Browse** and select the network.

If you are configuring NSX, select the NSX network, not the vCenter Server network.

This network becomes a cloud zone that supports the network profile.

- f To select and configure a DHCP or static IP connection type, click **Configure** and provide the values specific to your environment.

The network connection that you configure becomes a network profile.

- g To add NSX templates, click **Also add sample NSX cloud templates to the catalog** and select the **Tier-0 logical router** and the **Edge cluster**.

- h Click **Next Step**.

As part of this configuration process, a Quickstart cloud zone is defined for you and vCenter Server templates are added as cloud templates and catalog items.

6 Create a project and assign users.

Projects are used to manage people, assigned resources, cloud templates, and deployments. They can operate a business group to manage access and costs.

▼ **4 Project** Create a project, or select an existing project

Create or select a project that will have access to resources from this cloud account. You can add additional projects later.

Create a new project ▼

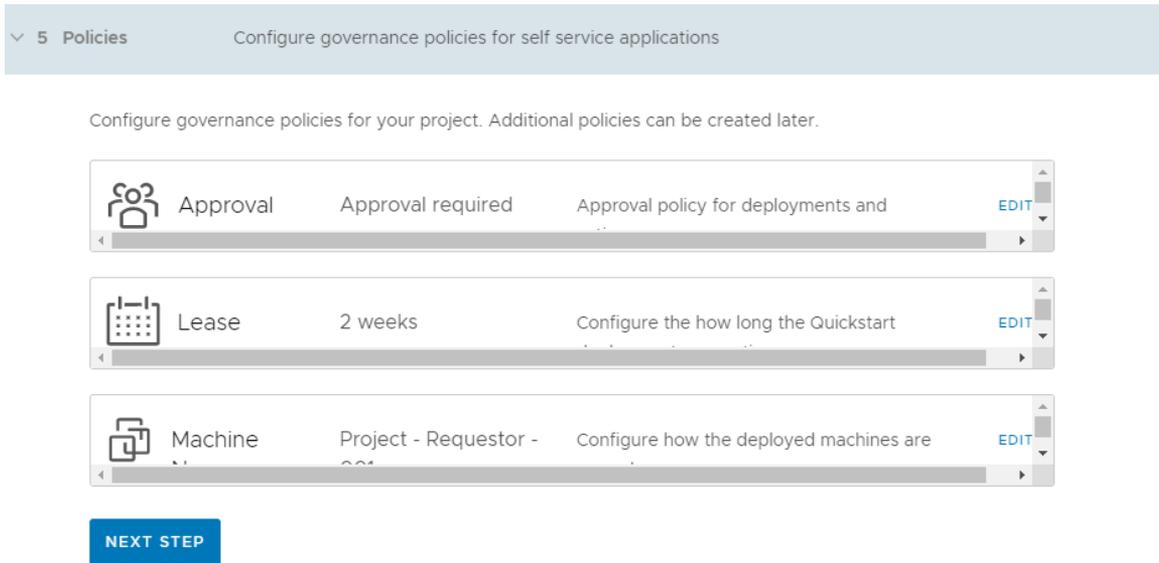
Name *	vCenter Server Quickstart Project 1	
Description	First project created using the <u>vCenter Server</u> wizard.	
Administrators	<div style="display: flex; align-items: center; margin-bottom: 5px;"> sylvia ✕ </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;">Search users</div>	i
Members	<div style="display: flex; align-items: center; margin-bottom: 5px;"> connie ✕ </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;">tony</div>	i

NEXT STEP

👤 Tony Anteater - tony

- a If this is your first time using the Quickstart, select **Create a new project**.
If you are using the Quickstart to add more templates to a project, select **Use an existing project**.
- b If you are making these templates available to others, add an **Administrator** and **Members**.
Administrators have more permissions than the members have.
- c Click **Next Step**.

- 7 Provide the starting policies and a machine naming policy so that all the deployments have the same approval requirements and lease time, and so that they follow a standard naming convention.

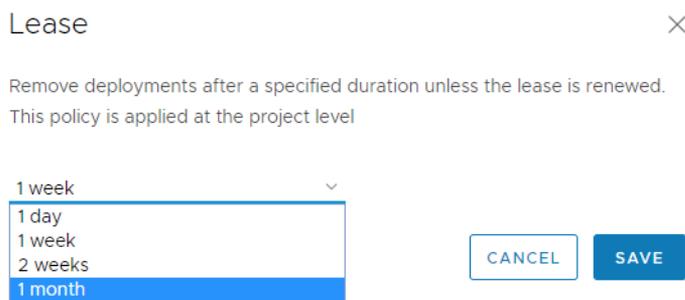


These policies are applied to deployments associated with the Quickstart project. The Quickstart creates the project for you. You define the policies.

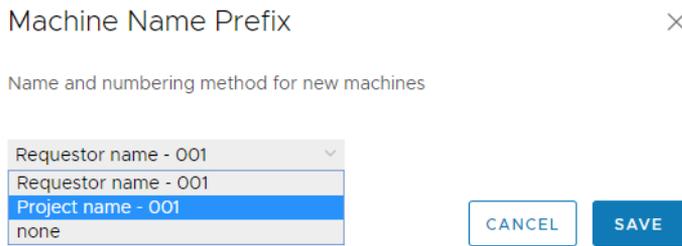
- a Edit the approval policy and assign it to yourself.

The approval policy requires the assigned user to approve the deployment request before the resources are deployed. If you assign it to someone else, you must change your custom permissions to give yourself the ability to approve the request.

- b Edit the lease and select the time after which the resources are destroyed if not renewed by the user.

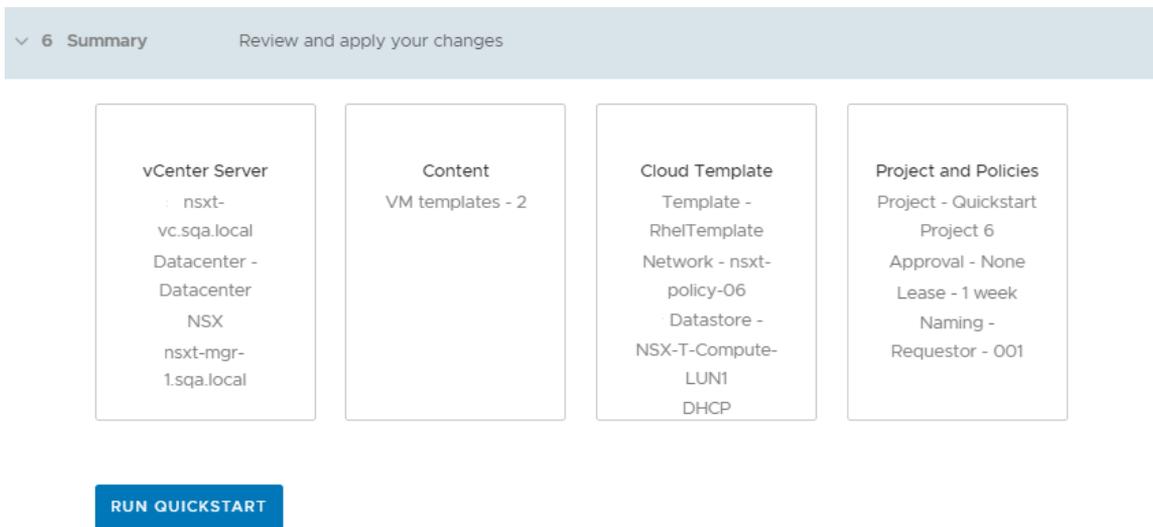


- c Edit the machine name and select the naming convention that you want to use.



- d Click **Next Step**.

- 8 Verify your configuration requests on the Summary page.



- 9 Click **Run Quickstart**.

What to do next

Take a tour of Cloud Assembly and Service Broker to discover more about how you manage your infrastructure, create templates, and deploy and manage resources. See [Take me on a tour of vRealize Automation to see what the Quickstart did](#).

How do I get started with vRealize Automation using the VMware Cloud Foundation Quickstart

If you use VMware Cloud Foundation to manage your SDDC, the Quickstart helps you connect it to vRealize Automation so that you can provision resources and then manage the life cycle of those resources.

Using the Cloud Foundation Quickstart, you do the following Cloud Assembly and Service Broker tasks that are used in this procedure.

- Add a vCenter Server cloud account for the vCenter Server instance associated with the selected SDDC Manager workload domain. Cloud accounts are the credentials that are used to collect data from and deploy resources to your vCenter Server instance.
- Add an NSX-T cloud account. The NSX cloud accounts are the credentials that are used to create and deploy NSX network resources.
- Select a datacenter. The datacenter is added as a cloud account region.
- Create a sample machine cloud template that you can deploy.
- Create a project. The project links your users with cloud account regions, so that they can deploy cloud templates with networks and storage resources to your vCenter Server instance.
- Create lease and machine naming policies. The lease policy controls how long a deployment is active. The naming policy provides a standardized naming convention for the resources.
- Add the templates to the catalog.
- Deploy a machine from the catalog.

After you run the Quickstart the first time, the Quickstart is added as a tile on the console services page. You can run it again to add new vCenter Server or Cloud Foundation instances.

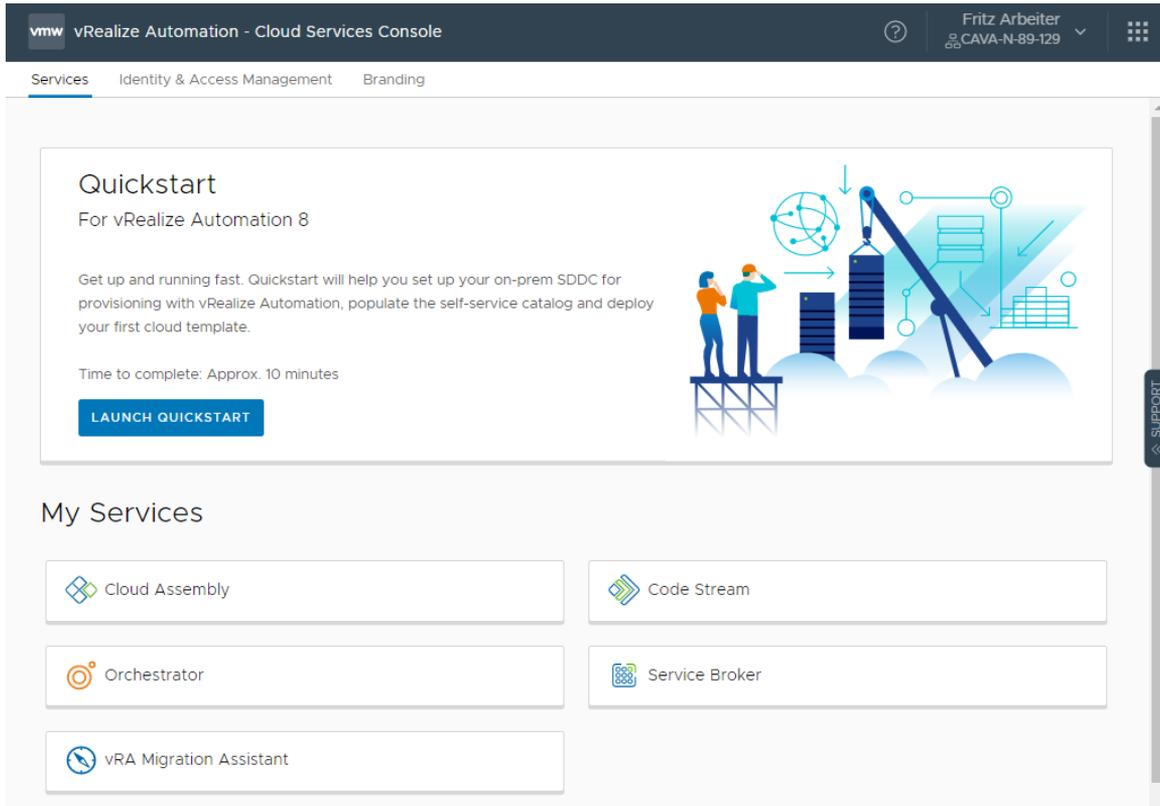
Much of this terminology might be new to you. As you finish the Quickstart, review the tour. Although the tour is based on the vCenter Server Quickstart, the tour applies to Cloud Foundation. In the tour, you are introduced to the new concepts in more detail. For more information, see [Take me on a tour of vRealize Automation to see what the Quickstart did](#).

Prerequisites

- Verify that you have the IP address or FQDN for the Cloud Foundation SDDC Manager that you are adding as a cloud account. You must also have the credentials for a SDDC Manager user account with the necessary permissions.
- Verify that the following exists in your Cloud Foundation instance.
 - A deployed NSX-T Edge
 - A tier-0 router
- Verify that you have a deployable virtual machine template that vRealize Automation can deploy as part of the Quickstart.

Procedure

- 1 After you install vRealize Automation and log in for the first time, click **Launch Quickstart**.



- 2 On the VMware Cloud Foundation card, click **Start**.
- 3 Add your SDDC Manager.

Quickstart

1 SDDC Manager Add a Cloud Foundation SDDC Manager and select a workload domain

Add a new SDDC Manager

SDDC Manager FQDN *	<input type="text" value="server.company.com"/>	?
SDDC Manager admin *	<input type="text" value="admin.username"/>	?
SDDC Manager password *	<input type="password" value="....."/>	

Remember that all values here are use case samples. Your account values depend on your environment.

Avoid any beginning or trailing spaces when you enter the values.

- a Enter the address and credentials.
- b Click **Validate**.

If your certificates are not configured, a warning appears regarding the untrusted certificate. You can resolve the trust or you can click **Accept** and continue.

- c After successful validation, select the workload domain that you want to deploy to.

Quickstart

▼ 1 SDDC Manager Add a Cloud Foundation SDDC Manager and select a workload domain

Add a new SDDC Manager ▼

SDDC Manager FQDN * sddcmgr.eng.com ⓘ

SDDC Manager admin * administrator@vsphere.local ⓘ

SDDC Manager password *

✔ Credentials validated successfully. ✕

Workload domain * ⓘ

	Name	Status	Type
<input checked="" type="radio"/>	MGMT	✕ Not Configured	MANAGEMENT
<input type="radio"/>	vra-vi-wld	✕ Not Configured	VI

2 Workload domain

The workload domain is added as an account region cloud zone in vRealize Automation.

- d Click **Create and go to next step**.

- 4 Verify the vCenter Server associated with the workload domain, and then select the data centers.

2 Cloud Account Enter credentials for vCenter Server and NSX Manager

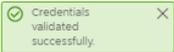
Cloud Account Name * VCF vCenter Server Cloud Account

Auto Configuration Automatically create service credentials ⓘ

vCenter Server vcfmgmtvc.eng.vmware.com

vCenter Server username * administrator@vsphere.local

vCenter Server password *

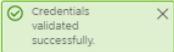
VALIDATE 

NSX Manager vcfnsxmgr.eng.vmware.com

NSX username * admin

NSX password *

NSX Mode Policy ⓘ

VALIDATE 

Configuration

Allow provisioning to these datacenters * SDDC-Datacenter

CREATE AND GO TO NEXT STEP

- a Review the information, provide the credentials, and then click **Validate and Create**.
- b Select the data centers that you want to deploy to.
Each data center is added as an account region cloud zone in vRealize Automation.
- c Click **Create and go to next step**.

5 Verify the NSX-T associated with the workload domain, and then select the router and Edge.

Quickstart

3 NSX Add the NSX Manager that is registered with your vCenter Server instance

The NSX Manager is added as a cloud account with the API credentials that were generated when you connected to the SDDC Manager.

Workload domain	MGMT
NSX-T	cmbuvcfnsmgr.eng.vmware.com

Endpoint created successfully

Tier-0 logical router *	<input type="text" value="vra-vcf-tier-0"/> ⓘ
Edge cluster *	<input type="text" value="EdgeCluster"/> ⓘ

4 Blueprint Select the blueprint configuration and deployment options

- a Review the information, and then click **Validate and Create**.
 - b Select the **Tier 0 Router** and the **Edge Cluster** that you want to use in your network profile.
 - c Click **Next Step**.
- 6 Set up your cloud template.

This process sets up the elements in your infrastructure. The terms that are used in Cloud Assembly and Service Broker are provided so that you become familiar with them and how they are used in the UI.

3 Content Populate the cloud with VM template images

Add content to your cloud. Items added here are used to populate the service catalog.

Datacenter * ⓘ

VM templates

Discovered templates 2 Selected templates 1 [SELECT TEMPLATES](#)

Create and deploy your first cloud template

Provide information needed to create a cloud template, add it to the catalog, and deploy it.

Template * ⓘ

Datastore / cluster ⓘ

Network * ⓘ [BROWSE](#)

IP assignment type DHCP ⓘ [CONFIGURE](#)

Also add sample NSX cloud templates to the catalog

Provide information needed to create a network profile that supports sample NSX on-demand infrastructure cloud templates.

Tier-0 logical router * ⓘ

Edge cluster * ⓘ

[NEXT STEP](#)

- Click in the text box to select the **Datacenter**.
The other possible values on this page are collected from your vCenter Server instance based on the provided credentials. This data center becomes a cloud zone in Cloud Assembly.
- To add one or more templates that exist on your vCenter Server to your catalog, select **VM templates** and select the templates.
These templates are virtual machine templates on your vCenter Server instance.
- To deploy a template, click **Select Templates** and locate the template that you want to deploy.
- Select the **Datastore / cluster**.
This datastore becomes a storage profile.
- To add a **Network**, click **Browse** and select the network.
If you are configuring NSX, select the NSX network, not the vCenter Server network.
This network becomes a cloud zone that supports the network profile.

- f To select and configure a DHCP or static IP connection type, click **Configure** and provide the values specific to your environment.

The network connection that you configure becomes a network profile.

- g To add NSX templates, click **Also add sample NSX cloud templates to the catalog** and select the **Tier-0 logical router** and the **Edge cluster**.

- h Click **Next Step**.

As part of this configuration process, a Quickstart project is defined for you. The project eventually links your users, infrastructure, and provisioning templates. You can see the project in the tour.

7 Create a project and assign users.

Projects are used to manage people, assigned resources, cloud templates, and deployments. They can operate a business group to manage access and costs.

4 Project Create a project, or select an existing project

Create or select a project that will have access to resources from this cloud account. You can add additional projects later.

Create a new project

Name * VCF Quickstart Project 2

Description

Administrators connie X Search users

Members Search users

NEXT STEP

- a If this is your first time using the Quickstart, select **Create a new project**.
If you are using the Quickstart to add more templates to a project, select **Use an existing project**.
- b If you are making these templates available to others, add an **Administrator** and **Members**.
Administrators have more permissions than the members have.
- c Click **Next Step**.

- 8 Provide the starting policies and a machine naming policy so that all the deployments have the same approval requirements and lease time, and so that they follow a standard naming convention.

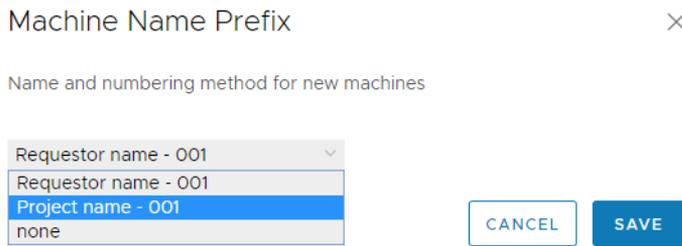
These policies are applied to deployments associated with the Quickstart project. The Quickstart creates the project for you based on the default name or one that you provide. You define the policies.

- a Edit the approval policy and assign it to yourself.

The approval policy requires the assigned user to approve the deployment request before the resources are deployed. If you assign it to someone else, you must change your custom permissions to give yourself the ability to approve the request.

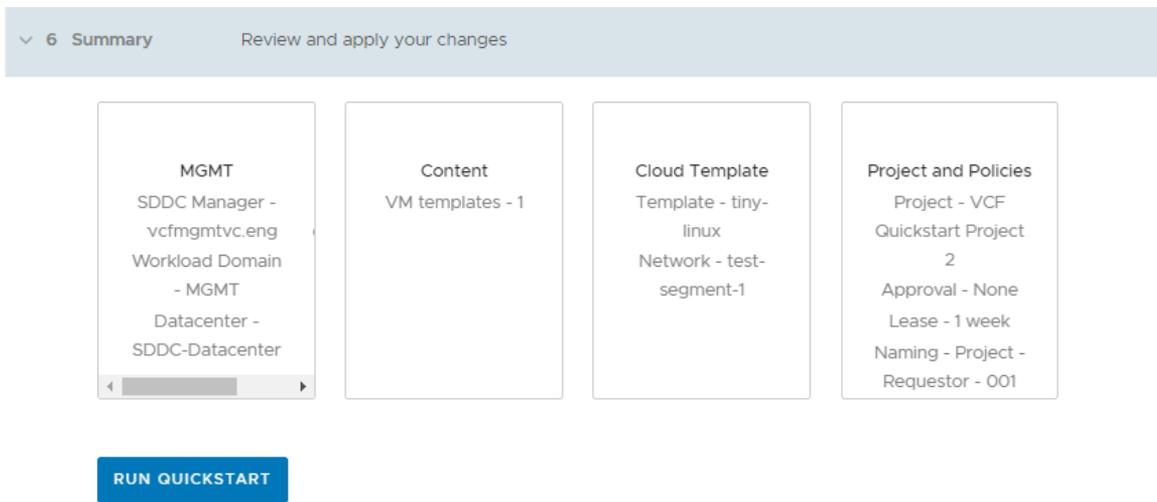
- b Edit the lease and select the time after which the resources are destroyed if not renewed by the user.

- c Edit the machine name and select the naming convention that you want to use.



- d Click **Next Step**.

- 9 Verify your configuration requests on the Summary page.



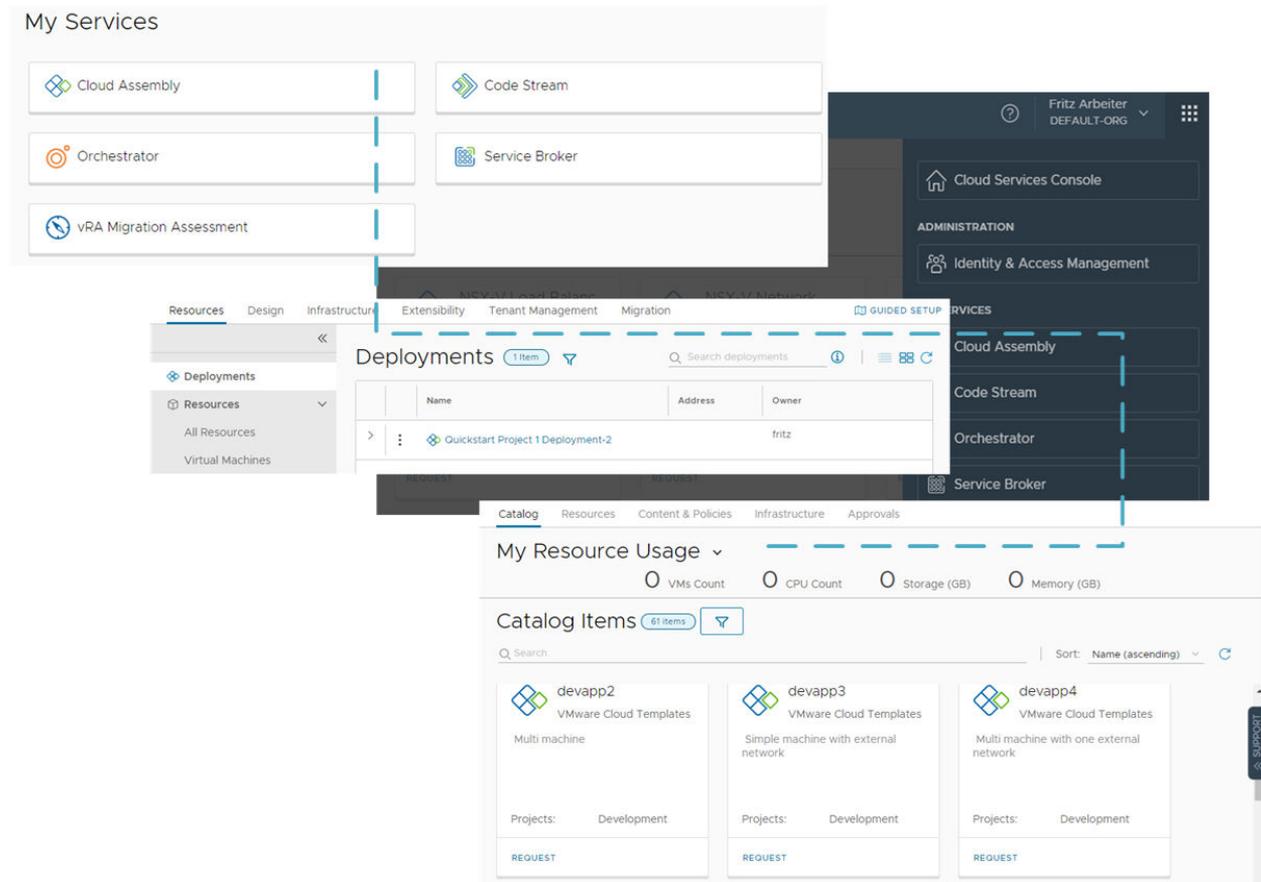
- 10 Click **Run Quickstart**.

What to do next

Take a tour of Cloud Assembly and Service Broker to discover more about how you manage your infrastructure, create cloud templates, and deploy and manage resources. See [Take me on a tour of vRealize Automation to see what the Quickstart did.](#)

Take me on a tour of vRealize Automation to see what the Quickstart did

If you run the vRealize Automation Quickstart, the wizard configures cloud accounts, some infrastructure, a project, and some cloud templates. It also deploys a cloud template. Follow the steps in this procedure to see what was added. You can also use this tour to learn about some of the Cloud Assembly and Service Broker features.



The information presented in this tour is based on the vCenter Server Quickstart, but the results are similar if you run the VMware Cloud Foundation Quickstart.

The tour follows the basic workflow that you use as you add new cloud accounts, develop your own cloud templates, and make them available to your consumers as a catalog. To expand your configured infrastructure to support a diverse range of development operation team projects, you must broaden your infrastructure so that you can create more refined cloud templates. This tour is only a starting point. It is intended to familiarize you with the user interface and how to use it.

You begin with the console, then Cloud Assembly, where cloud administrators and cloud template developers do most of their work. This is followed by Service Broker, which you configure to provide catalog items that your consumers can request and manage.

Prerequisites

- The procedure assumes that you ran the Quickstart. See [How do I get started with vRealize Automation using the VMware vCenter Server Quickstart](#).
- If you did not, you can use the Guided Setup to get started creating your cloud infrastructure. See [How do I get started with Cloud Assembly using the Guided Setup](#).

- Log in as a user with a cloud administrator role.

Procedure

1 [Tour of the Quickstart changes to Cloud Assembly](#)

This tour of Cloud Assembly shows you what the Quickstart configured and deployed. It is designed to guide you through the user interface and help you understand some of the tasks you might later perform on your own.

2 [Tour of the Quickstart changes to Service Broker](#)

Service Broker is where you provide your users with a catalog of templates that they can deploy to the cloud accounts that you provide. In this part of the tour, you can see what the Quickstart configured for you.

Tour of the Quickstart changes to Cloud Assembly

This tour of Cloud Assembly shows you what the Quickstart configured and deployed. It is designed to guide you through the user interface and help you understand some of the tasks you might later perform on your own.

When you log in to vRealize Automation, you might see the Identity and Access Management and Branding tab. These tabs are not covered as part of the tour. You use them as you add users and manage your organizations.

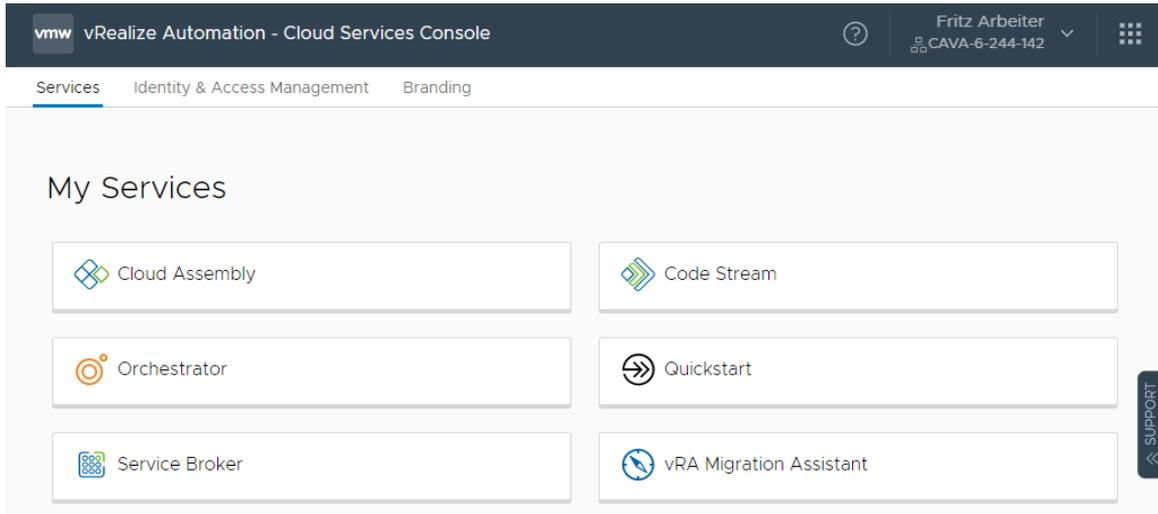
For more about identity management and branding, see [Administering vRealize Automation](#)

Prerequisites

- This procedure assumes that you ran the Quickstart. See [How do I get started with vRealize Automation using the VMware vCenter Server Quickstart](#).
- Log in as a user with an administrator role.

Procedure

- 1 As a cloud administrator, log in to vRealize Automation.

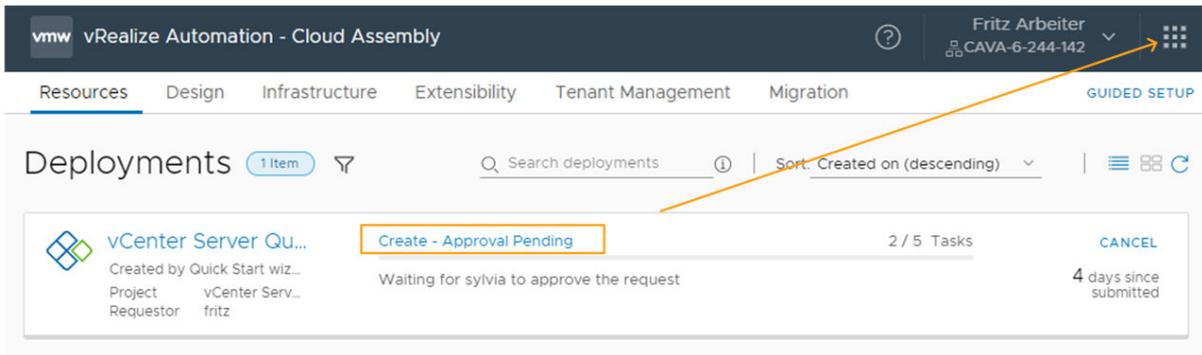


- 2 Click **Cloud Assembly**.

Cloud Assembly opens with the Deployments page active.

The deployments in Cloud Assembly are the cloud templates that are provisioned on your cloud account platforms. A successfully deployed cloud template represents your final goal as an administrator or cloud template designer. Because this tour is to help you understand your workflow, we start with connecting to cloud accounts first and return to deployments later.

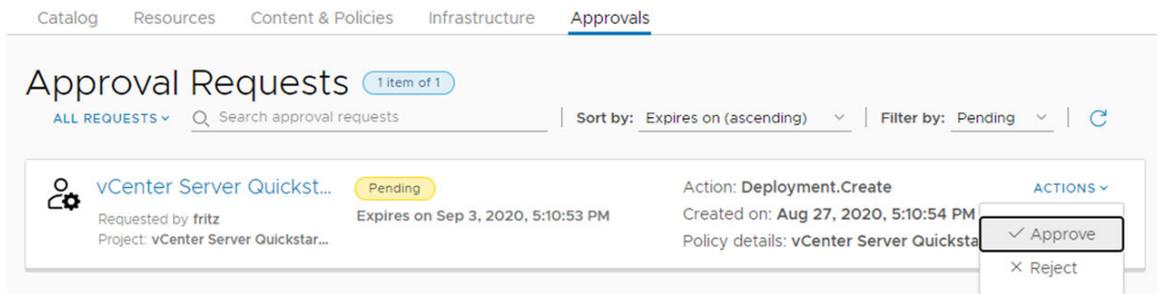
- 3 To access Service Broker, click the VMware Cloud Services switcher icon on the tool bar and click **Service Broker**.



- a To access Service Broker, click the VMware Cloud Services switcher icon on the tool bar and click **Service Broker**.

Consider opening it in a new tab, just be efficient. You'll be back in Cloud Assembly to restart the tour in just a few steps.

- b Log in as the approving user and click the **Approvals** tab.

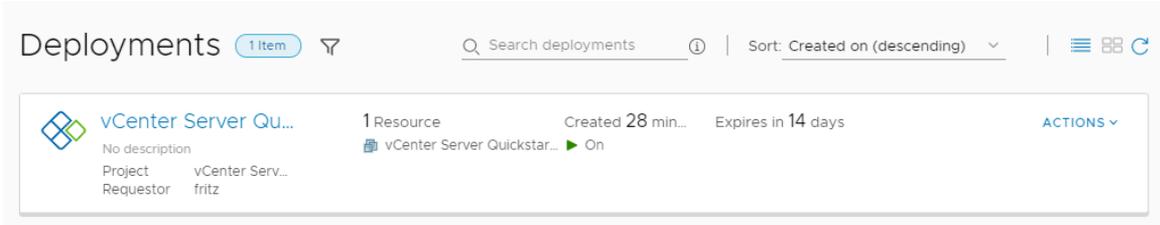


If you do not see the approval request listed, you are an approver. You can set up the user that you assigned, or you can give yourself permission. To give approval permissions to yourself, return to Cloud Assembly and give yourself the Manage Approval role. If you see the approval request, skip this permission section.

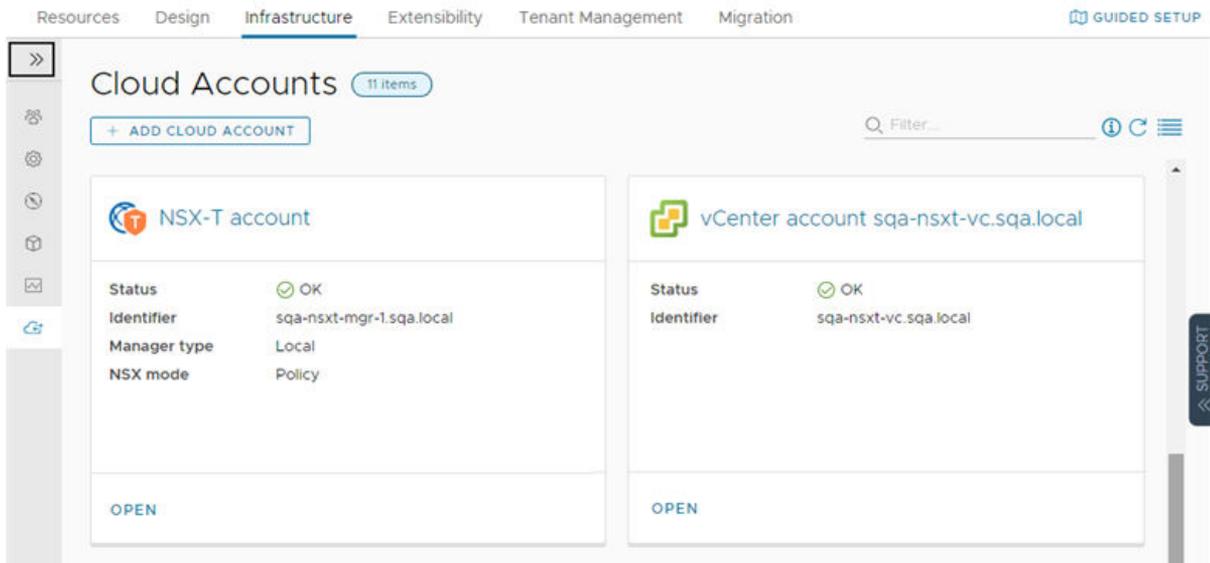
- 1 In Cloud Assembly, select **Infrastructure > Administration > Custom Roles** and click **New Custom Role**.
- 2 Enter a name, select **Manage Approvals**, and click **Create**.
- 3 On the card or when you open the custom role, click Assign and add yourself as a user.

- c On the Approvals tab in Service Broker, click **Actions** and select **Approve**.
- d Return to Cloud Assembly and select **Resources > Deployments**.

We will continue with the tour when the deployment process is completed. Here is an example of a successful deployment.



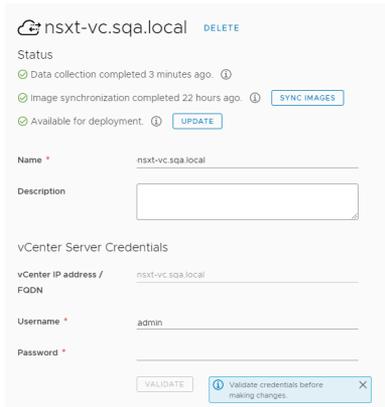
- 4 To learn how the vCenter Server Quickstart configured Cloud Assembly to support the deployment, begin by selecting **Infrastructure > Connections > Cloud Accounts**.



Cloud accounts provide the credentials that are used to connect to your target systems. Using the provided credentials, Cloud Assembly can monitor the status, collect information, and deploy workloads to those systems. In this example, you can see the NSX and vSphere instances that you provided in the Quickstart.

Each time you run the Quickstart, a new cloud zone is added.

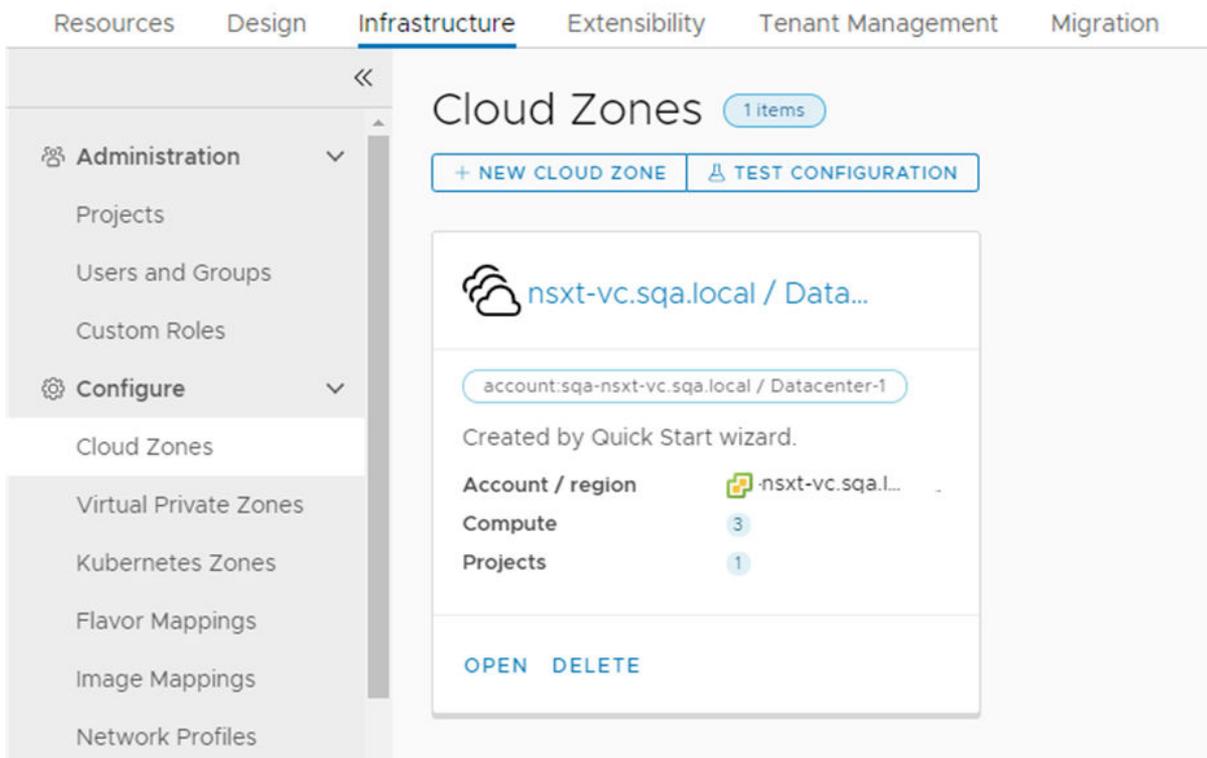
- a Click the vSphere cloud account name.



Notice that the account name is based on the vCenter Server FQDN and that the NSX endpoint matches the NSX instance that you provided.

If you look at the NSX cloud account, you see same relationships regarding name and vSphere endpoint. The endpoint, in this user interface, is the cloud account.

- 5 Let's look at the cloud zones that were created from the cloud accounts. Select **Infrastructure > Configure > Cloud Zones**



Cloud zones are the account regions or data centers that are associated with your cloud account. If your cloud account includes more than one region, then multiple cloud zones might be created from that cloud account. For example, you might have more than one data center or region, and each one becomes a cloud zone. Cloud zones are then associated with projects, allowing you to grant users permission to deploy to a specific set of cloud resources.

- 6 To see the network you configured, select **Infrastructure > Configure > Network Profiles**.

The screenshot displays the vRealize Automation Cloud Assembly interface. The top navigation bar includes 'Resources', 'Design', 'Infrastructure' (selected), 'Extensibility', 'Tenant Management', and 'Migration'. The left sidebar is expanded to 'Configure > Network Profiles'. The main content area is titled 'Network Profiles' and shows a single profile for 'nsxt-vc.sqa.local / Datacenter-1'. The profile details include:

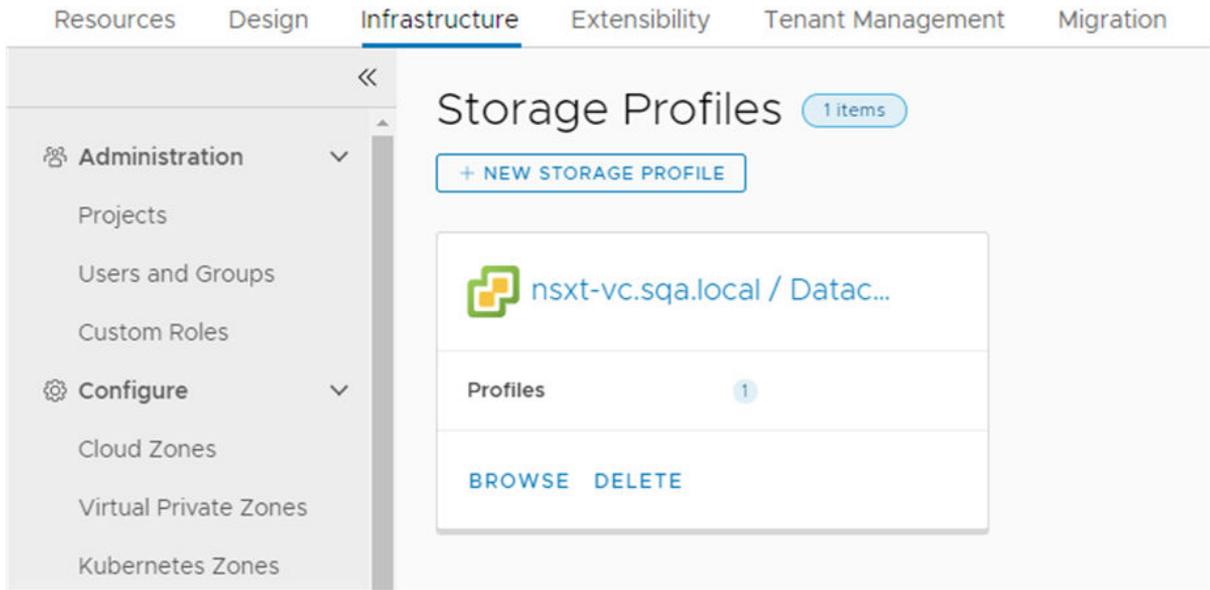
- Account / region: nsxt-vc.sqa.l...
- Existing networks: 1
- Created by: Quick Start wizard.

 At the bottom of the profile card are 'OPEN' and 'DELETE' buttons. A '+ NEW NETWORK PROFILE' button is also visible at the top of the main content area.

A network profile defines a group of networks and network settings that are available for a cloud account in a particular region or data center.

If you run the Quickstart more than once, a network profile is added each time you run it.

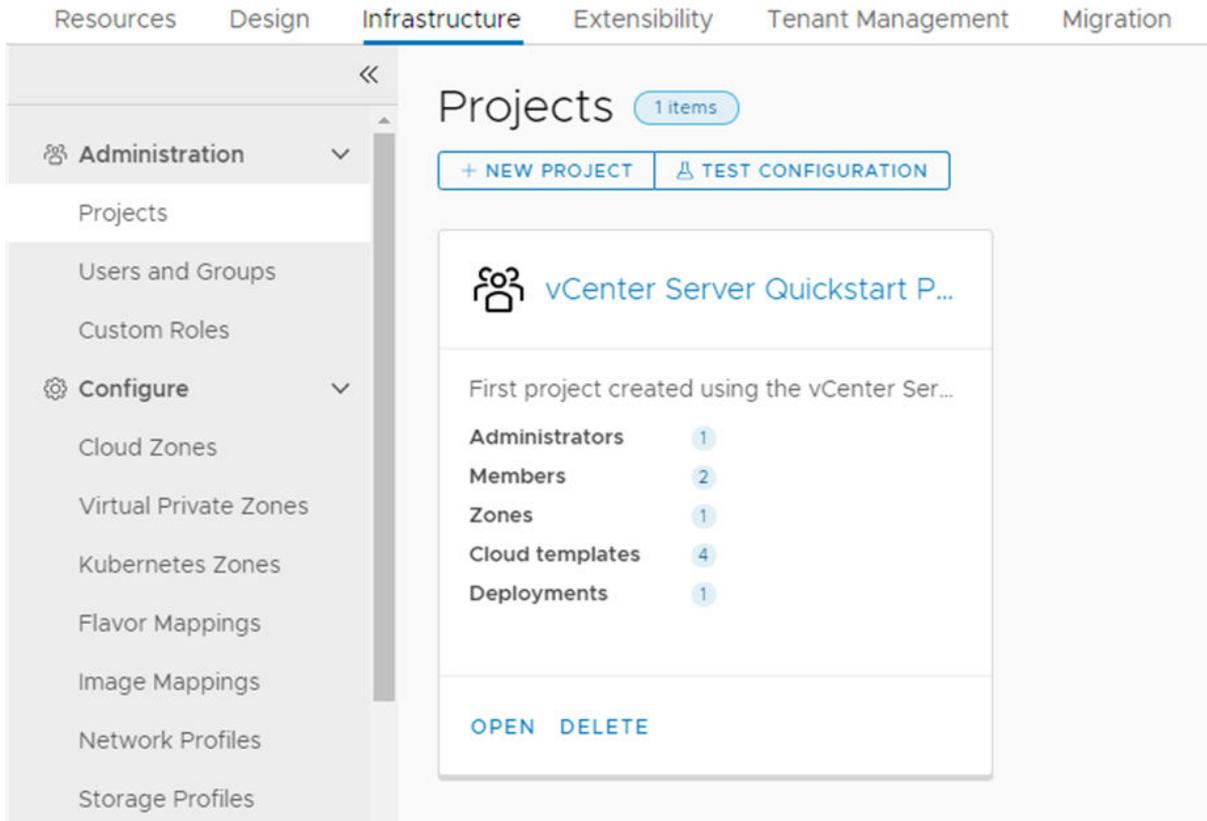
7 To see the storage you configured, select **Infrastructure > Configure > Storage Profiles**.



Storage profiles are organized under cloud-specific regions. One cloud account might have multiple regions, with multiple storage profiles under each region.

If you run the Quickstart wizard more than once, a storage profile is added to the associated datacenter each time you run the wizard.

- 8 To see the project that was created, even though you provided no specific values, select **Infrastructure > Projects > Projects**.



Projects link users and resources so that users can only deploy to the cloud zones that you specify. You might later create other projects to support different development teams.

- a Click the project name, and then click the **Users** tab.

This tab is where you can add more users to a project.

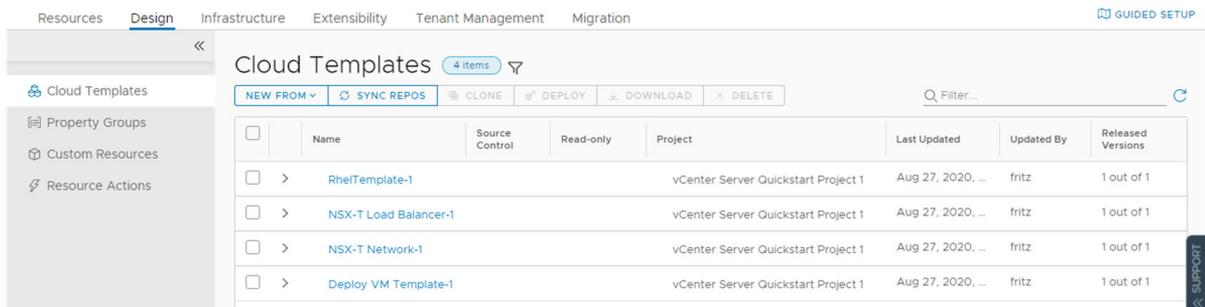
- b Click the **Provisioning** tab.

This tab is where you add or remove the cloud zones. Notice that you have the `Quickstart` cloud zone.

- c Scroll down the provisioning page and locate **Custom Naming**.

Notice that the custom naming template has the machine name prefix format that you selected in the policies section in the Quickstart. The custom naming is associated with projects.

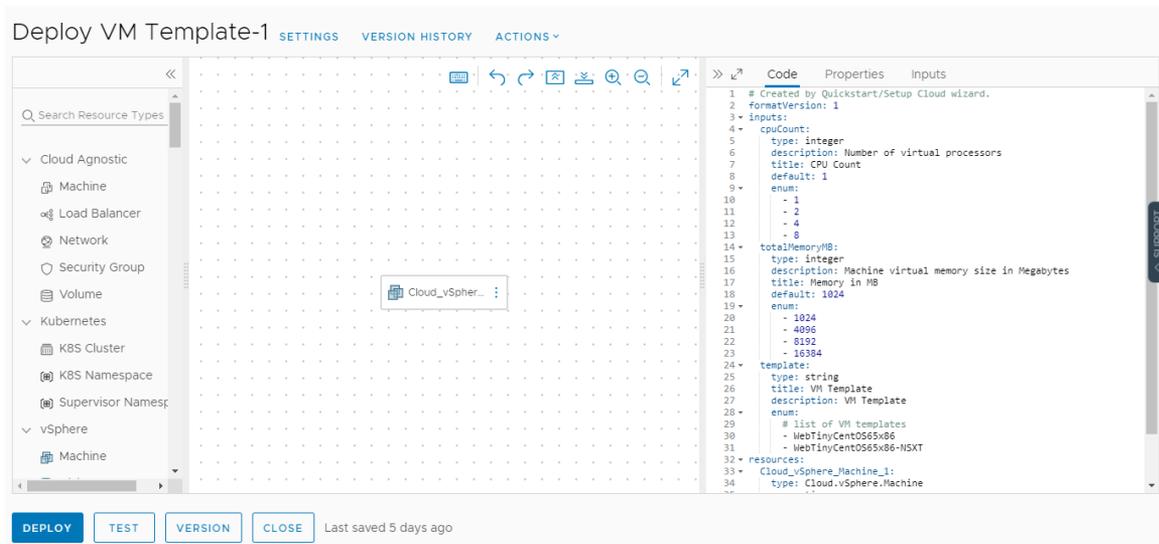
9 To see the cloud templates that were created, click the **Cloud Templates** tab.



As part of the Quickstart, you have three cloud templates. The machine cloud template was deployed, the NSX-T network and load balancer templates are provided as examples and were not deployed.

If you run the Quickstart wizard more than once, you will have cloud templates that are created for each wizard configuration.

- a In the Project column, notice that cloud templates are associated with the Quickstart project.
- b In the Released Versions column, notice that each cloud template is released.
- c To see the cloud template canvas and where you release the templates, click the name of the template that you selected in the Quickstart. In this example, the cloud template name begins with .



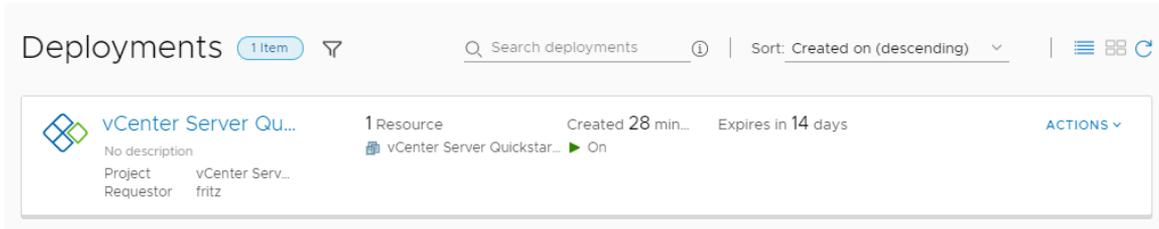
- d In the center is the canvas where you drag components and connect them.
- e On the right is the cloud template-as-code YAML editor where you can refine all the details for a cloud template.

The YAML defines the cloud template components.

- f On the left is the searchable list of components that you can add to the cloud template.
- g To version the cloud template, click **Version** and notice that there is already a released version of the template.

You can deploy cloud templates in Cloud Assembly that are released or unreleased. To make templates available in Service Broker, they must be released.

10 Select Resources > Deployments.



If you ran the Quickstart wizard more than once, you will have deployments as validation for each wizard configuration.

- a Review the information that is provided on the deployment card.
 - Deployment name is Quickstart deployment.
 - Project is Quickstart project.
 - Requestor is Fritz. In your environment, it is the user account that you used to run the Quickstart.
 - Resource name is fritz-001. This name is based on the custom naming that you defined in the Quickstart. If you deploy another resource using this naming convention, the name is likely to be fritz-002.
 - Power status indicates that the resource is On.
 - Expires in the month is the starting lease period. The value will count down to the expiration date.
 - Actions are the deployment level changes you can make, including power off or destroy.
- b Click the deployment name in the deployments list so that you can see the deployment details and review the available information.

The screenshot displays the vCenter Server Quickstart Project 1 Deployment card. The card includes a 'Create Successful' status indicator and an 'ACTIONS' dropdown menu. Below the card, the 'Topology' tab is active, showing a single resource named 'Cloud_vSphere_Machine_1'. The 'ACTIONS' dropdown menu for this resource is open, listing various actions such as 'Add Disk', 'Change Security Groups', 'Connect to Remote Console', 'Create Snapshot', 'Delete', 'Power Off', 'Reboot', 'Reset', 'Resize', and 'Resize Boot Disk'.

- Name of the cloud template that was used to create the deployment. In this example, it is the template that you selected in the Quickstart.
- The Topology tab provides a visualization of the relationship between the deployed components. This example is a simple machine. If the deployment had multiple machines, networking, and storage, you can see a more robust topology.
- Tabs for History and Monitor. History as the log of the deployment and any changes that you make using the actions. Monitor is relevant if you integrate with vRealize Operations Manager.

- Account regions where the resource was deployed.
- Actions that you can run on the selected resource.

11 To understand how the deployment was provisioned, select **Infrastructure > Activity > Requests**, and click the deployment name.

The screenshot displays the 'Request Details' page in the vRealize Automation Cloud Assembly interface. The page is titled 'Request Details' and shows a progress bar with four stages: NETWORK ALLOCATION, MACHINE ALLOCATION (highlighted), NETWORK PROVISIONING, and MACHINE PROVISIONING. The main content area is divided into two sections: 'Requests' and 'Projects'.

Requests Section:

- Request: Cloud_vSphere_Machine_1
- Success: Allocated to Quickstart cloud zone
- Request type: Allocation
- CPUs: 1
- Memory: 1GB
- Constraints: quick_start:20191002-164600:hard

Projects Section:

- Project: Quickstart project

Cloud Zone	Priority	Instances	Memory
Quickstart cloud zone	0	0 / Unlimited	Unlimited / Unlimited

A 'CLOSE' button is located at the bottom left of the main content area. The interface also includes a left-hand navigation menu with categories like Resources, Activity, and Connections, and a top navigation bar with tabs for Resources, Design, Infrastructure, Extensibility, Tenant Management, and Migration.

The Request Details provide a graphical view of how the deployment request is processed and provisioned. You can look at the project, the machine, and the network allocation and provisioning to see where the workload was placed.

As you create your infrastructure and cloud templates, the request details provide insights that you can use to troubleshoot unexpected behavior or deployment failures.

What to do next

Continue your tour in Service Broker.

Tour of the Quickstart changes to Service Broker

Service Broker is where you provide your users with a catalog of templates that they can deploy to the cloud accounts that you provide. In this part of the tour, you can see what the Quickstart configured for you.

The tour gets you started learning the user interface and understanding some of the tasks you can later perform on your own.

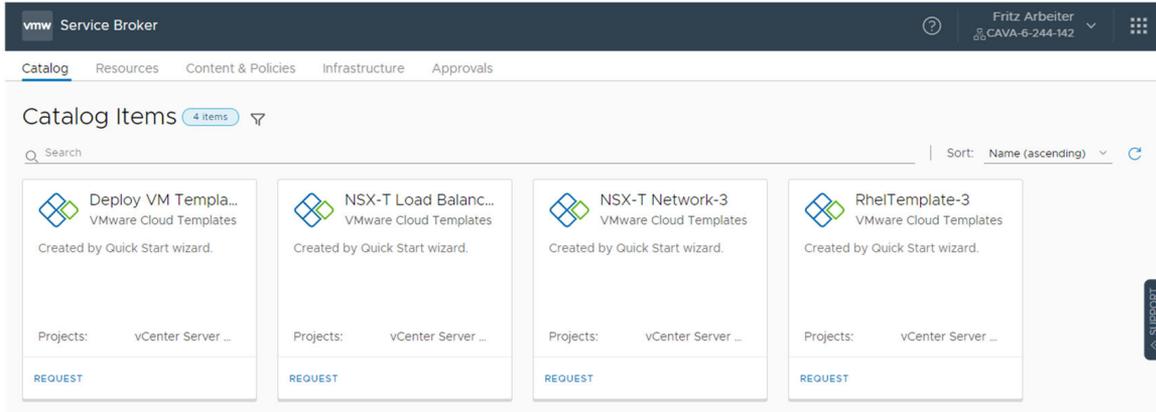
If you run the Quickstart wizard more than once, you will see representative examples for each run as you progress through this tour.

Prerequisites

Review the tour of Cloud Assembly. See [Tour of the Quickstart changes to Cloud Assembly](#).

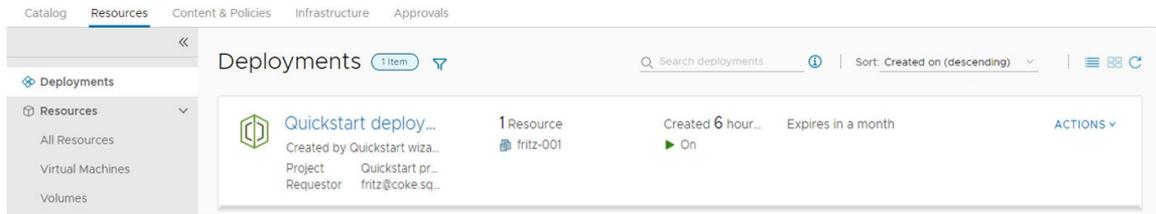
Procedure

- 1 To see how your consumers deploy templates, navigate to Service Broker using the menu in the upper right corner.
 - a Click the navigation matrix in the upper right corner.
 - b Select **Service Broker**.



Notice that the three catalog items are the released VMware cloud templates from Cloud Assembly.

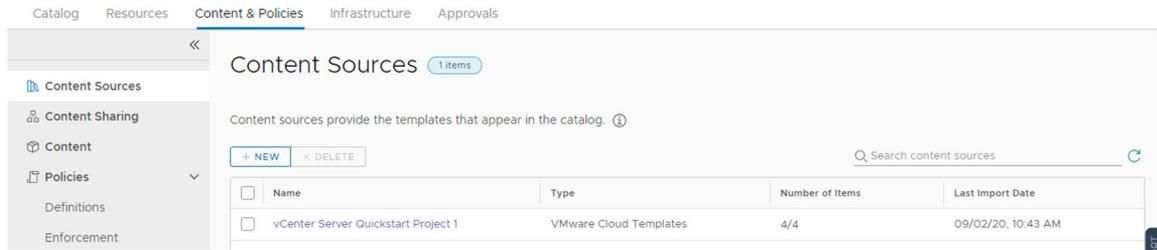
- c To see what the Quickstart deployed, select **Resources > Deployments** .



Notice that this deployment is the same one that we saw in Cloud Assembly.

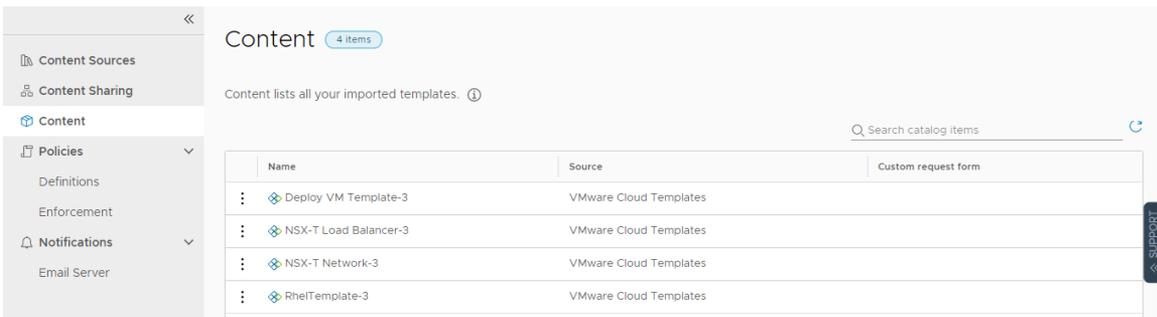
2 To review how Quickstart configured Service Broker to provide the templates in the catalog, select **Content and Policies**.

a Click **Content Sources**.



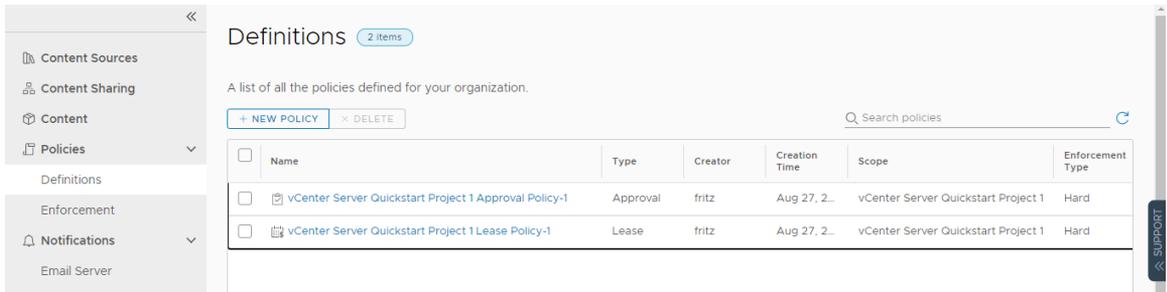
In this case, the Cloud Assembly templates are the content source. You can also add Amazon Web Services CloudFormation templates, vRealize Orchestrator workflows, and templates that you want to provide to your consumers.

b Click **Content**.



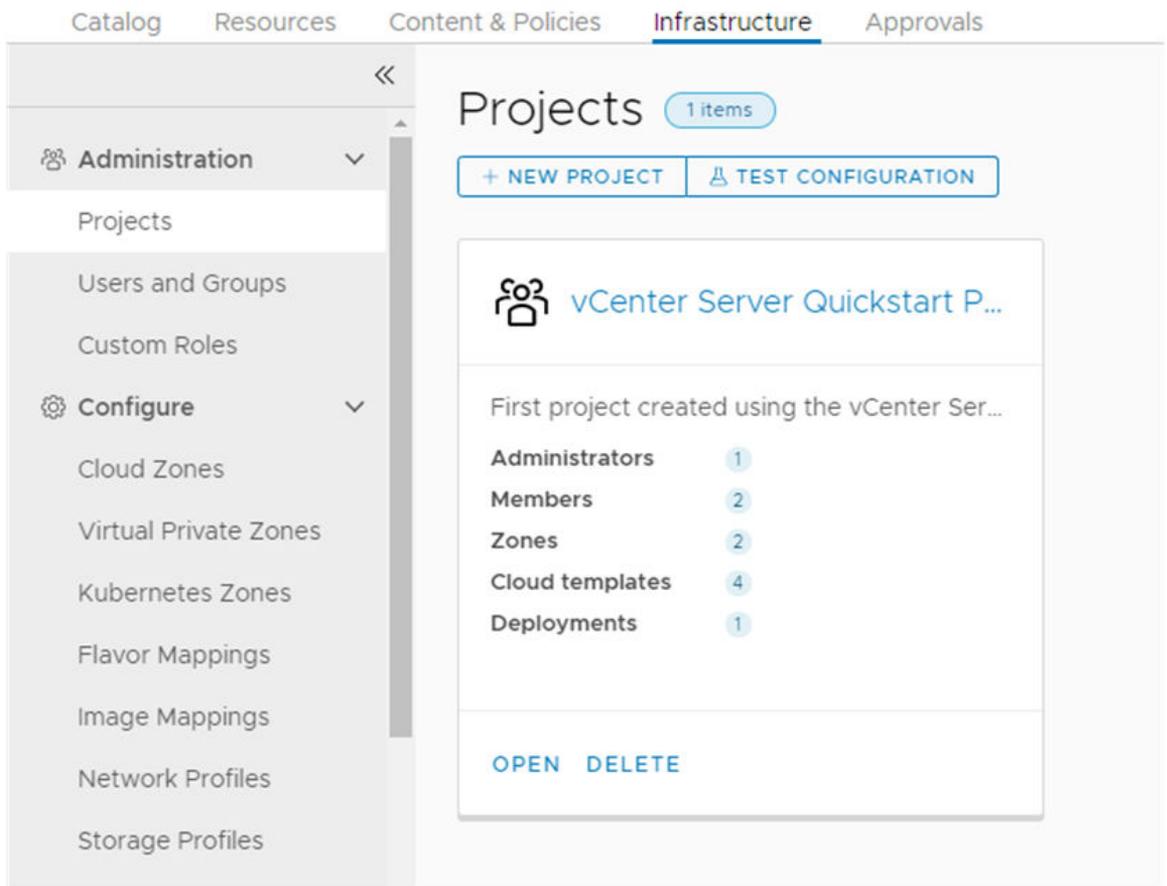
This list is where you see the list of all the content in Service Broker, including the templates from Cloud Assembly.

c Select **Policies > Definitions**.



You create and manage policies in Service Broker, including lease policies that apply to Cloud Assembly deployments.

d To review the project and the custom name that you created in the Quickstart, and that you saw in the Cloud Assembly part of the tour, select **Infrastructure > Administration > Projects**.



Notice that only a limited number of the infrastructure options that you saw in Cloud Assembly are available in Service Broker. Only the options that you must use to set up the catalog for your consumers are provided.

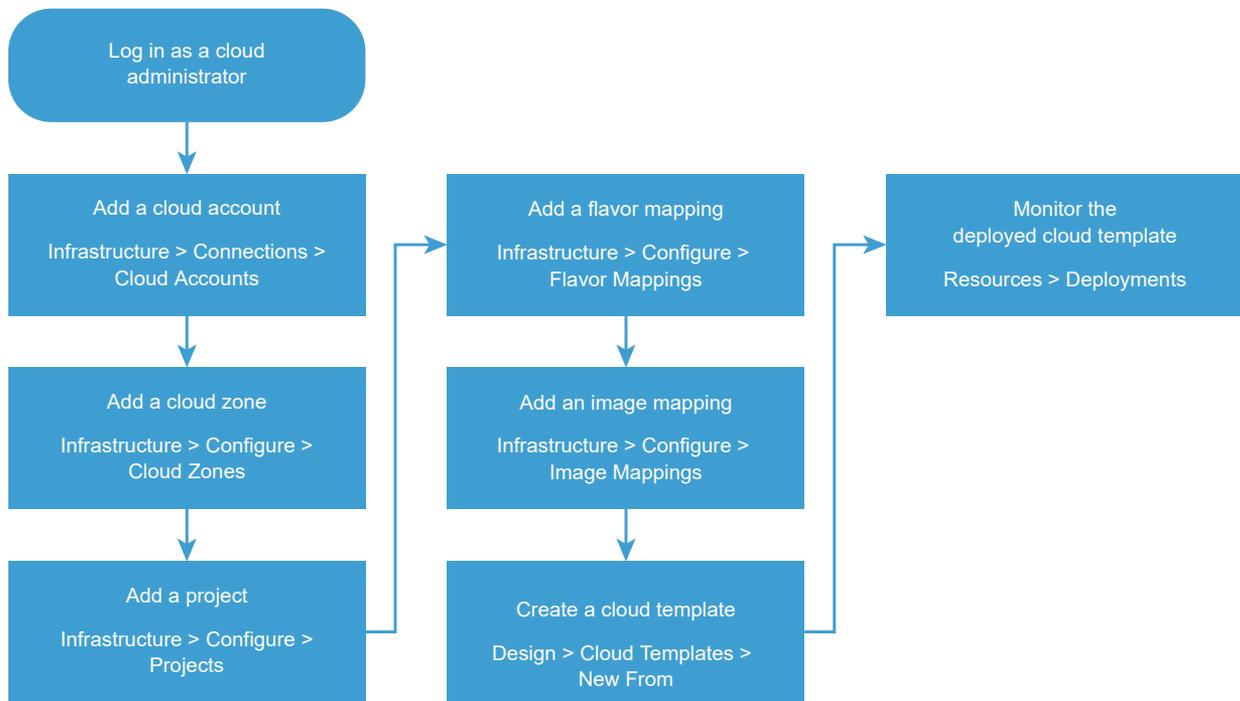
What to do next

To add another cloud account, configure the infrastructure to support it, and deploy a template to support it, use the guided setup. See [How do I get started with Cloud Assembly using the Guided Setup](#).

How do I get started with Cloud Assembly using the Guided Setup

To set up and verify your Cloud Assembly instance, you configure the infrastructure based on the cloud accounts, and then you create and deploy cloud templates to ensure that everything is flowing through the system.

This use case helps you, a cloud administrator, through your first time using Cloud Assembly. You add an Amazon Web Services cloud account and configure the infrastructure related to that account. The infrastructure consists of a cloud account region, a project to link users to the region, and some size and image mapping that you use at deployment time. To test the infrastructure, you next create and deploy a simple cloud template.



To help you with this getting started process, the instructions are available as a Guided Setup in the user interface.

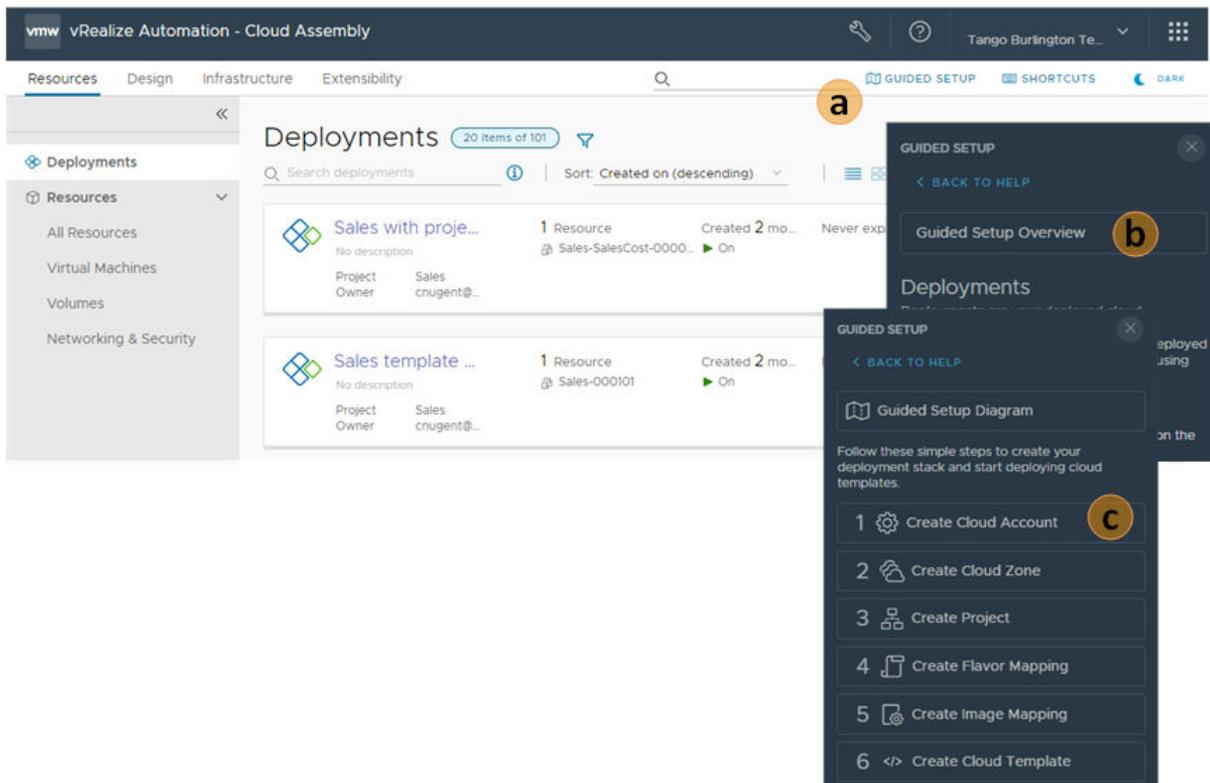
The first time that you log in to Cloud Assembly, you might encounter the Guided Setup Diagram. The diagram illustrates how the components that you configure process a cloud template at request time. Click **Continue** and configure your cloud account.

Prerequisites

- Log in as a cloud administrator.
- Verify that you have the credentials required to connect to the cloud account. If you have an Amazon Web Services account, consider using those credentials. See [Chapter 3 Before you begin with Cloud Assembly](#) for details.

Procedure

- 1 Open the **Guided Setup**.



- a Click **Guided Setup** on the tab bar.
- b In the support panel, click **Guided Setup Overview**.

The Guided Setup is contextually sensitive to the page that you are on in the user interface. The initial Guided Setup topic that opens depends on the page you are on in the user interface. The link to the Guided Setup overview is at the top of each getting started topic.

- c In the step list, click **Create Cloud Account** to begin.

The guided opens the cloud account topic and opens the page in the UI.

Use the information in the support panel and the provided workflow to set up your infrastructure, create a cloud template, and deploy the template.

2 Add a cloud account.

The screenshot displays the vRealize Automation Cloud Assembly interface. The main window shows the 'Cloud Accounts' section under the 'Infrastructure' tab, with a sub-header '10 items'. A '+ ADD CLOUD ACCOUNT' button is visible. Two cloud accounts are listed:

- nsxt-manager**: Status OK, Identifier `cmbu-w01-nsx10.eng.vmware.com`, Manager type Local, NSX mode Manager. An 'OPEN' button is present below the details.
- nsxv-manager-new**: Status OK, Identifier `eso-vra-vc03-nsxmgr01.eng.vmware.com`.

The right-hand side of the image shows a 'GUIDED SETUP' panel with a 'BACK TO HELP' link and a 'Guided Setup Overview' section. The overview text states: 'Cloud accounts allow you to bring your public cloud and on-prem data centers under management.' Below this, a five-step list provides instructions:

- 1 Click **Add Cloud Account**.
- 2 Select the account type you would like to add.
- 3 Enter cloud credentials and click **Validate**.
- 4 Enter cloud account name and description.
- 5 Add applicable capability tags. Add capability tags, which match this cloud account to cloud template constraints during provisioning. For example you might tag an account as `dev` to indicate that it's matched with cloud templates intended for a development environment. If you are not ready to define tags, you can return to the cloud account and add tags later.

3 Create a cloud zone for one of your Amazon Web Services regions.

The screenshot shows the 'Cloud Zones' management interface. At the top, there are tabs for 'Resources', 'Design', 'Infrastructure' (selected), and 'Extensibility'. The main area is titled 'Cloud Zones' with a '7 items' indicator. Below the title are buttons for '+ NEW CLOUD ZONE' and 'TEST CONFIGURATION'. A search bar labeled 'Filter...' is present. The main content area lists two cloud zones:

- vCenter account sqa-nsxt-vc.sqa.local / Da...**
 - Account / region: vCenter account sqa-nsxt-...
 - Compute: 3
 - Projects: 0
 - Buttons: OPEN, DELETE
- CmbuTangoE2EVC01-Res1**
 - Account / region: CmbuTangoE2EVC01 / ES...

At the bottom right of the list, it says '7 items'. On the right side, a dark sidebar titled 'GUIDED SETUP' contains the following text:

Cloud Zones

Cloud zones associate compute resources with projects and account/regions to form the basis of deployable virtual machines. In addition, they enable you to define capabilities that Cloud Assembly matches with cloud template constraints to define where and how resources are configured for deployments.

- 1 Click **New Cloud Zone** or use one of the existing Cloud Zones.
- 2 Select an account/region and enter a name and description.
- 3 Select a placement policy that defines how provisioned resources are distributed among hosts in this cloud zone.
- 4 Add applicable capability tags. Add capability tags, which match this cloud zone to cloud template constraints during provisioning. For example you might tag a zone as `dev` to indicate that it's matched with cloud templates intended for a development environment. If you are not ready to define tags, you can return to the cloud zone and add tags later.
- 5 Click the **Compute** tab and view the compute resources in this cloud zone. If you don't want to use all the compute

4 Create a project with users and the cloud zone.

The screenshot shows the 'Projects' page in the vRealize Automation Cloud Assembly interface. The page is titled 'Projects' and shows 10 items. There are two project cards visible:

- AmazonCloudGrp**: Shows 1 Administrator, 1 Zone, and 1 Cloud template. Buttons for 'OPEN' and 'DELETE' are visible.
- CustomFormsGroup**: Shows 2 Administrators.

The 'Guided Setup Overview' sidebar on the right provides the following steps:

- 1 Click **New Project**.
- 2 Enter project information on the **Summary** tab. For this setup example, the project name is *dev-basic*.
- 3 Click the **Users** tab and add one or more users. Project users must be existing active service organization users.
- 4 Click the **Provisioning** tab and add one or more zones. The selected zones must have the appropriate infrastructure resources to support the project goals. If you are just getting started, ignore Constraints and Custom Properties for now. You can go back and add them later if necessary.
- 5 Click **Create**.

A button labeled **NEXT: CREATE FLAVOR MAPPING** is located at the bottom of the sidebar.

5 Create a small flavor mapping.

The screenshot displays the vRealize Automation Cloud Assembly interface. The main view is titled "Flavor Mappings" and shows a list of three mappings: "small", "v-medium", and "v-small". Each mapping has a table with "Account / regions" and a count. The "small" mapping has 18 account/regions, "v-medium" has 1, and "v-small" has 4. Each mapping also has "OPEN" and "DELETE" buttons. A "+ NEW FLAVOR MAPPING" button is visible at the top. The interface includes a navigation sidebar on the left and a "GUIDED SETUP" panel on the right.

Flavor Mappings Table:

Flavor Name	Account / regions	Count
small	Account / regions	18
v-medium	Account / regions	1
v-small	Account / regions	4

Guided Setup Overview:

Flavor Mappings
 Cloud vendors use flavors, or instance types, to express standard deployment sizings such as small (1 CPU, 2 GB RAM) or large (2 CPU, 8 GB RAM) for compute resources. When you build a cloud template, you pick a flavor that fits your needs.

Map a flavor name to a value for each account/region.

- 1 Click **New Flavor Mapping**.
- 2 Enter a new **Flavor name**, such as *StdSmall_1_2*.
- 3 Click in **Account/Region** and select one of the available cloud account/regions.
- 4 Specify a compute value.
 - For Microsoft Azure: Click or type in **Value** and select *Standard_B1ms*.
 - For AWS: Click or type in **Value** and select *t2.small*.
 - For vSphere or NSX-V/T: Specify 1

6 Create an ubuntu-16 image mapping.

The screenshot shows the vRealize Automation Cloud Assembly interface. The main content area is titled 'Image Mappings' and contains a list of existing mappings. The 'GUIDED SETUP' panel on the right provides instructions for creating a new image mapping.

Image Mappings (14 items)

Image Name	Account / region	Count
TinyCentOS	Account / region	5
centos	Account / region	3
jjeaaptestvcMapping		

GUIDED SETUP

GUIDED SETUP SHORTCUTS DARK

< BACK TO HELP

Guided Setup Overview

Image Mappings

Cloud vendors use images to configure a VM based on OS settings, such as an ubuntu-16 configuration. When you build a cloud template, you pick an image that fits your needs. Map an image name to a value for each account/region. You can also add constraints and configuration scripts to further control resource placement.

Map an image name to a value for each account/region.

- 1 Click **New Image Mapping**.
- 2 Enter a new **Image name**, such as *ubuntu-16*.
- 3 Click in **Account/Region** and select one of the available cloud account/regions.
- 4 Click in **Value** and start to type **ubuntu-16**. Select one of the available ubuntu-16 configurations to complete the first map row. If you are just getting started, ignore **Constraints** and **CloudConfig** for now. You can go back and add them later if necessary.

- 7 Create a simple cloud template that deploys a small machine with the ubuntu-16 operating system.

The screenshot displays the vRealize Automation Cloud Assembly interface. The main window shows the 'Cloud Templates' section with a 'NEW FROM' dropdown menu. A 'New Cloud Template' dialog box is open, featuring the following fields and options:

- Name ***: A text input field with the placeholder text 'e.g. cloud template1'.
- Description**: A large empty text area.
- Project ***: A search input field with the placeholder text 'Search for a project'.
- Cloud template sharing in Service Broker**: Two radio button options:
 - Share only with this project
 - Allow an administrator to share with any project in this organization

At the bottom of the dialog are 'CANCEL' and 'CREATE' buttons.

On the right side, a 'Guided Setup Overview' sidebar is visible, titled 'Cloud Templates'. It contains the following text:

Cloud templates are specifications for the resources that you deploy. You can continuously improve a cloud template after you deploy it.

- 1 Click **New from - blank canvas**.
- 2 Enter a name, select a project, and click **Create**.
The cloud template and project examples in this setup are *CloudTemplate-1* and *dev-basic*.
- 3 Drag components to the canvas.
For example, a **Cloud Agnostic > Machine** is a cloud-neutral virtual machine that can deploy to any cloud vendor.
- 4 Edit the code to configure properties.
For example, the YAML code below adds a flavor size and operating system image to the cloud-neutral virtual machine.

```
resources:
  Cloud_Machine_1:
    type: Cloud.Machine
    properties:
      flavor: StdSmall_1_2
      image: ubuntu-16
```

8 Check on your deployed cloud template.

The screenshot displays the vRealize Automation Cloud Assembly interface. The main window shows a 'Deployments' section with a search bar and a list of 30 items. The list includes various cloud resources such as 'tes ldap', 'aws-vm-with-new-disk-and-network_58baa...', 'aws-vm-with-new-disk_917a31fb-a760-49ff...', 'aws-vm-with-new-disk_b41a1248-a0f5-4104...', 'aws-vm-new-disk_2094ab8c-119d-4ea7-b2f...', 'aws-disk-2', 'azure-vm-existing-disk-network_1700383d-...', 'azure-disk-2', and 'azure-vm-existing-disk_c6c3fd9c-c478-462...'. The sidebar on the right is titled 'Guided Setup Overview' and contains a 'Deployments' section with the following text: 'Deployments are your deployed cloud templates. You can monitor the status of submitted requests, keep track of your deployed resources, and manage those resources using actions.'

1 Monitor the request status.

- Track the provisioning process on the deployment card status bar.
- If the deployment status is Running, your application is deployed and running. The IP address is also available.

2 Troubleshoot failed requests.

- Click the deployment name and review the **History** tab for error messages.

3 Manage deployed resources.

- Click the deployment name and review the **Topology** tab to understand the deployment structure and access the external link to the application on the cloud resource. You

What else can I do with Cloud Assembly

5

As a cloud administrator, you use Cloud Assembly to provide cloud templates to your developers so that they can deploy the templates. To manage your cloud resources, you configure the accounts, the regions, the policies, and the projects. If it suits your organization, you can delegate the cloud template creation to project members, or you can create them yourself.

In addition to the following suggestions, you can assign roles to your users. See [Administering vRealize Automation](#).

To learn about...	See in <i>Using and Managing Cloud Assembly...</i>
Adding more cloud accounts and integrations.	Setting up Cloud Assembly for your organization
Building out your infrastructure.	Building your Cloud Assembly resource infrastructure
Using projects effectively.	How Do I Set Up Cloud Assembly Projects
Infrastructure and template tutorials, starting with vSphere.	vSphere tutorial
Building cloud templates.	How Do I Create and Deploy Cloud Assembly cloud templates
Troubleshooting failed deployments.	What Can I Do If a Deployment Fails