User Guide

Amazon Elastic VMware Service

Amazon Elastic VMware Service: User Guide

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What is Amazon Elastic VMware Service?

You can use Amazon Elastic VMware Service (Amazon EVS) to deploy and run a VMware Cloud Foundation (VCF) environment directly on EC2 bare metal instances within Amazon Virtual Private Cloud (VPC).

Topics

Features of Amazon EVS

The following are key features of Amazon EVS:

Simplify and accelerate your migration to AWS

Remove migration friction and ensure operational consistency with subscription portability and automated deployment of VMware Cloud Foundation (VCF) in the cloud. Extend on-premises networks and migrate workloads without having to change IP addresses, retrain staff, or re-write operational runbooks.

Retain control of your VMware architecture in the cloud

Keep complete control over your VMware architecture and optimize a virtualization stack that meets the unique demands of your applications, including add-ons and third-party solutions.

Self-manage or leverage AWS Partners for a managed experience

Unlock choice and flexibility to self-manage, or leverage the expertise of AWS Partners to manage and operate your VCF environment on AWS to meet your business goals across talent, time, and costs.

Scale and protect your business from disruptions

Enhance scalability on the most secure, scalable, and resilient cloud for migrating and operating your VMware-based workloads.

Embrace AWS innovation to transform your applications and infrastructure

As an AWS-native service, Amazon EVS simplifies extending and expanding your VMware environment with 200+ services (including managed databases, analytics, serverless and containers, and generative AI) to transform your business.

Get started with Amazon EVS

To create your first Amazon EVS environment, see *Getting started*. In general, getting started with Amazon EVS involves completing the following steps.

1. Complete prerequisites. For more information, see *Setting up Amazon Elastic VMware Service*.
2. Create an Amazon EVS environment. During environment creation, Amazon EVS creates the required VLAN subnets using the CIDR ranges that you specify and adds hosts to the environment.
3. Customize VCF. Configure your environment in the vSphere user interface according to your needs. This may include setting up logins, policies, monitoring, and more.
4. Connect and migrate. Connect your environment to your on-premises data center and migrate your VCF workloads to Amazon EVS.

Accessing Amazon EVS

You can define and configure your Amazon EVS deployments using the following interfaces:

- Amazon EVS console - Provides a web interface to create Amazon EVS environments.
- AWS CLI - Provides commands for a broad set of AWS services and is supported on Windows, macOS, and Linux. For more information, see AWS Command Line Interface.
- AWS CloudFormation - Provides a specification for each resource type, such as `AWS::EVS::Environment`. You create a template using the resource specification, and CloudFormation takes care of provisioning and configuring the resources for you.

Concepts and components of Amazon EVS

This section explains some key Amazon EVS concepts and components.

Amazon EVS environment

An Amazon EVS *environment* is a logical container for VMware Cloud Foundation (VCF) resources, such as vSphere hosts, vSAN, NSX, and SDDC Manager. An environment contains a consolidated VCF domain with a vSphere cluster that hosts the components for managing, monitoring, and instantiating the VCF software stack. Each environment directly maps to an SDDC Manager appliance. For more information, see the section called “Architecture”.

Amazon EVS host

An Amazon EVS *host* is a VMware ESXi host that runs on Amazon EC2 bare metal instances.

Service access subnet

The *service access subnet* is a standard VPC subnet that allows Amazon EVS to access the VCF deployment. During Amazon EVS environment creation, you specify the VPC and subnet for Amazon EVS to use for service access.

When you create an Amazon EVS environment, Amazon EVS provisions elastic network interfaces into the service access subnet to facilitate management connectivity to VCF appliances and ESXi hosts. This connectivity is required for Amazon EVS to be able to deploy, manage, and monitor the VCF deployment.

Amazon EVS VLAN subnet

An *Amazon EVS VLAN subnet* is an Amazon VPC subnet that is managed by Amazon EVS. VLAN subnets provide VPC connectivity for Amazon EVS hosts, and VCF appliances such as VMware NSX, VMware HCX, and VMware vCenter Server. Each VLAN subnet has a VLAN tag to allow VLAN network traffic to be segmented logically.

Amazon EVS creates all of the VLAN subnets that the service uses when the Amazon EVS environment is created. You provide the CIDR block inputs that the VLAN subnets use. You should ensure that your VLAN subnet CIDR blocks are properly sized according to the number of hosts that will be configured, taking into account future scaling needs. CIDR blocks must have a minimum size of /28 netmask and a maximum size of /24 netmask. CIDR blocks must not overlap with any existing CIDR block that’s associated with the VPC.

On creation, VLAN subnets are implicitly associated your VPC’s main route table. Post-deployment you can explicitly associate VLAN subnets with a custom route table. For more information, see the section called “Amazon EVS networking considerations”.

Important

Amazon EVS VLAN subnets can only be created during Amazon EVS environment creation, and cannot be modified after the environment is created. You must ensure that the VLAN subnet CIDR blocks are properly sized before creating the environment. You will not be able to add VLAN subnets after the environment is deployed.

Important

EC2 security group rules are not enforced on Amazon EVS elastic network interfaces that are attached to VLAN subnets. To control traffic to and from VLAN subnets, you must use a network access control list.

Host management VLAN subnet

The *host management VLAN subnet* separates management traffic from user traffic, and allows for remote management of hosts. The EVS host management vmkernel network interface connects to this subnet.

vMotion VLAN subnet

The *vMotion VLAN subnet* logically segments VMware vMotion traffic, and is used during a vMotion process to move virtual machines between hosts.

vSAN VLAN subnet

The *vSAN VLAN subnet* is used by VMware vSAN to separate traffic related to vSAN's storage operations from other network traffic.

VTEP VLAN subnet

The *VTEP VLAN subnet* uses VMware NSX virtual tunnel endpoints (VTEP) to encapsulate and decapsulate overlay network traffic for the Amazon EVS ESXi hosts.

Edge VTEP VLAN subnet

The *Edge VTEP VLAN subnet* is a specialized VTEP VLAN subnet that is dedicated for NSX Edge appliance overlay traffic. This VLAN is used for overlay communication between NSX edges and ESXi hosts.

Management VM VLAN subnet

The *Management VM VLAN subnet* is used for managing virtual appliances, including NSX Manager, vCenter Server, and SDDC Manager.

HCX uplink VLAN subnet

The *HCX uplink VLAN subnet* is used for communication between the HCX Interconnect (HCX-IX) and HCX Network Extension (HCX-NE) appliances, and enables the creation of the HCX service mesh uplink.

NSX uplink VLAN subnet

The *NSX uplink VLAN subnet* is used for connecting your NSX overlay networks to the rest of your VPC and any other external networks that you configure. The NSX uplink VLAN subnet is configured on the NSX Edge node uplinks.

Expansion VLAN subnet

The *expansion VLAN subnet* can be used to enable additional VCF-supported functions, such as NSX Federation. Amazon EVS creates two expansion VLAN subnets during environment creation.

VMware NSX

VMware NSX is a software-defined networking (SDN) platform that enables network virtualization. Amazon EVS uses VMware NSX to create and manage the overlay network where VMware Cloud Foundation (VCF) appliances and workloads run. Amazon EVS deploys a pair of Active/Standby NSX Edge nodes, along with an NSX overlay network. Amazon EVS automatically configures all of the NSX routing and uplinks on your behalf as part of deployment. For more information about common NSX concepts, see Key Concepts in the *VMware NSX Installation Guide*.

VMware Hybrid Cloud Extension (HCX)

VMware Hybrid Cloud Extension (VMware HCX) is an application mobility platform designed for simplifying application migration, rebalancing workloads, and optimizing disaster recovery across

data centers and clouds. You can use HCX to migrate your VMware-based workloads to Amazon EVS.

You can configure connectivity for VMware HCX using AWS Direct Connect with an associated transit gateway, or using an AWS Site-to-Site VPN attachment to a transit gateway. For more information, see *Migration*.

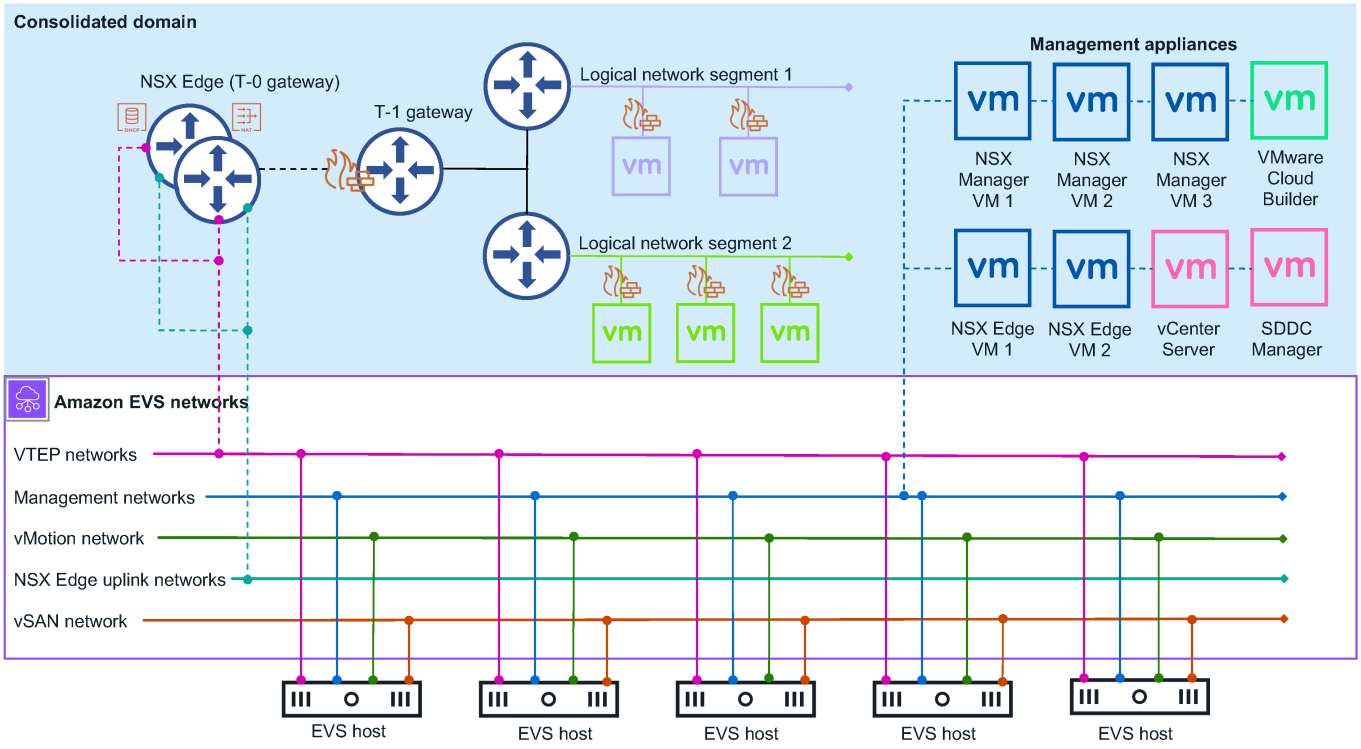
Amazon EVS architecture

Amazon EVS implements a VMware Cloud Foundation (VCF) consolidated architecture model. In this model, VCF management components and customer workloads run together on a consolidated domain. The Amazon EVS environment is managed from a single vCenter Server with vSphere resource pools that provide isolation between management and customer workloads.

The consolidated domain that Amazon EVS deploys contains the following VCF management components:

- ESXi hosts
- vCenter Server instance
- SDDC Manager
- vSAN datastore
- Three-node NSX Manager cluster
- vSphere cluster
- NSX Edge cluster

The following diagram shows an example Amazon EVS architecture that's been deployed in an Amazon EVS environment, and shows how the components in the environment are connected. In the diagram, the Amazon EVS environment with a consolidated domain architecture is shaded in blue. The underlying Amazon EVS network topology is illustrated within the solid purple line.



Network topology

An Amazon EVS environment has two separate management network layers:

Amazon VPC

The Amazon VPC and the Amazon EVS VLAN subnets that are created in the VPC during environment creation form the underlay network for your VCF deployment. This infrastructure provide connectivity for NSX overlay networks, host management, vMotion, and VSAN. Amazon VPC Route Server enables dynamic routing between the underlay network and overlay networks. For more information, see the section called “Concepts and components”.

> **Note**
>
> Amazon EVS VLAN subnets are used to facilitate VCF underlay communication only. Guest virtual machines running customer workloads must be deployed on NSX overlay networks. Deployment of guest virtual machines on the Amazon EVS VLAN subnet underlay network is not supported.

VMware NSX overlay network

Amazon EVS configures an NSX overlay network on your behalf as part of the deployment. You can configure additional NSX overlay networks to achieve network isolation between different workloads or applications within your Amazon EVS environment. For more information, see Overlay Design for VMware Cloud Foundation in the VMware Cloud Foundation product documentation.

> **Note**
>
> Amazon EVS supports only one tier-0 gateway for an Active/Standby NSX Edge cluster with two NSX Edge nodes. This tier-0 gateway connects to and advertises all overlay networks that you configure for use with Amazon EVS.

The two network layers are connected by an Active/Standby NSX Edge cluster with two NSX Edge nodes. The NSX Edge nodes enable communication over the VPC between virtual machines in the VLANs, as well as internet connectivity, and private connectivity using AWS Direct Connect or AWS Site-to-Site VPN with a transit gateway.

Amazon EVS networking considerations

The management network requires the following networking resource configurations. You provide these inputs during Amazon EVS environment creation. For more information, see the section called “Concepts and components”.

- An Amazon VPC. Ensure that your VPC IPv4 CIDR block is sized appropriately to accommodate the required VPC subnet and Amazon EVS VLAN subnets that Amazon EVS provisions during environment creation. For more information, see the section called “Amazon EVS VLAN subnet”.

  > **Note**
  >
  > Amazon EVS does not support IPv6 at this time.

- A service access subnet in your VPC. Amazon EVS uses this subnet to maintain a persistent connection to your SDDC Manager appliance. For more information, see service access subnet.

> **Note**
>
> Amazon EVS only supports Single-AZ deployments at this time. All VPC subnets that Amazon EVS uses must exist in a single Availability Zone in a Region where the service is available.

> **Note**
>
> All VPC subnets require associated route tables that are configured according to your organization's networking requirements.

- A primary DNS server IP address and a secondary DNS server IP address in the VPC's DHCP option set to resolve host IP addresses. Amazon EVS also requires that you create a DNS forward lookup zone with A records and a reverse lookup zone with PTR records for each VCF management appliance and Amazon EVS host in your deployment. For more information, see the section called "Configure DNS servers".
- Amazon EVS VLAN subnet CIDR blocks for each VLAN subnet that Amazon EVS provisions for you during environment creation. CIDR blocks must have a minimum size of /28 netmask and a maximum size of /24 netmask. CIDR blocks must be non-overlapping.
- An Amazon VPC Route Server instance with Route Server propagation enabled.
- Two Route Server endpoints in the service access subnet.
- Two Route Server peers that peer the NSX Edge nodes that Amazon EVS provisions with Route Server endpoints.

Tier-0 gateway

The tier-0 gateway handles all north-south traffic between the logical and physical networks and is created on the NSX overlay network. This tier-0 gateway is created as a part of Amazon EVS deployment.

> **Note**
>
> Amazon EVS supports only one tier-0 gateway for an Active/Standby NSX Edge cluster with two NSX Edge nodes.

Tier-1 gateway

The tier-1 gateway handles east-west traffic between routed network segments within an environment and is created on the NSX overlay network. The tier-1 gateway has downlink connections to segments and uplink connections to the tier-0 gateway. You can create and configure additional Tier-1 gateways if you need them.

NSX Edge cluster

Amazon EVS uses the NSX Manager interface to deploy an NSX Edge cluster with two NSX Edge nodes that run in Active/Standby mode. This NSX Edge cluster provides the platform on which the Tier-0 and Tier-1 gateways run, along with IPsec VPN connections and their BGP routing machinery.

Amazon EVS resources

Amazon EVS provisions the following AWS resources during environment creation. These resources appear in the VPC that you allow Amazon EVS to access, and are visible in the AWS Management Console and AWS CLI after they are created.

> **Important**
>
> Modification of these resources outside of the Amazon EVS console and API could impact the availability and stability of your Amazon EVS environment.

- Amazon EVS elastic network interfaces that enable connectivity to your VCF appliances and hosts.
- Amazon EVS ESXi hosts that run on Amazon EC2 bare metal instances. For more information, see the section called “Amazon EVS host”.

  > **Important**
  >
  > Your Amazon EVS environment must have a minimum of 4 hosts and no more than 16 hosts. Amazon EVS only support environments with 4-16 hosts.

- Amazon EVS VLAN subnets that connect your VPC to VCF appliances. For more information, see the section called “Amazon EVS VLAN subnet”.

Setting up Amazon Elastic VMware Service

To use Amazon EVS, you will need to configure other AWS services, as well as set up your environment to meet VMware Cloud Foundation (VCF) requirements. For a summary checklist of deployment prerequisites, see the section called “Deployment checklist”.

Topics

Sign up for AWS

If you don’t have an AWS account, complete the following steps to create one.

1. Open https://portal.aws.amazon.com/billing/signup.
2. Follow the online instructions.

Create an IAM user

1. Sign in to the IAM console as the account owner by choosing **Root user** and entering your AWS account email address. On the next page, enter your password.

   > **Note**
   >
   > We strongly recommend that you adhere to the best practice of using the `Administrator` IAM user below and securely lock away the root user credentials. Sign in as the root user only to perform a few account and service management tasks.

2. In the navigation pane, choose **Users** and then choose **Create user**.
3. For **User name**, enter `Administrator`.
4. Select the check box next to **AWS Management Console access**. Then select **Custom password**, and then enter your new password in the text box.
5. (Optional) By default, AWS requires the new user to create a new password when first signing in. You can clear the check box next to **User must create a new password at next sign-in** to allow the new user to reset their password after they sign in.
6. Choose **Next: Permissions**.
7. Under **Set permissions**, choose **Add user to group**.
8. Choose **Create group**.
9. In the **Create group** dialog box, for **Group name** enter `Administrators`.
10. Choose **Filter policies**, and then select **AWS managed -job function** to filter the table contents.
11. In the policy list, select the check box for **AdministratorAccess**. Then choose **Create group**.

    > **Note**
    >
    > You must activate IAM user and role access to Billing before you can use the `AdministratorAccess` permissions to access the AWS Billing and Cost Management console. To do this, follow the instructions in step 1 of the tutorial about delegating access to the billing console.

12. Back in the list of groups, select the check box for your new group. Choose **Refresh** if necessary to see the group in the list.
13. Choose **Next: Tags**.

14. (Optional) Add metadata to the user by attaching tags as key-value pairs. For more information about using tags in IAM, see Tagging IAM Entities in the *IAM User Guide*.
15. Choose **Next: Review** to see the list of group memberships to be added to the new user. When you are ready to proceed, choose **Create user**.

You can use this same process to create more groups and users and to give your users access to your AWS account resources. To learn about using policies that restrict user permissions to specific AWS resources, see Access Management and Example Policies.

Create an IAM role to delegate Amazon EVS permission to an IAM user

You can use roles to delegate access to your AWS resources. With IAM roles, you can establish trust relationships between your trusting account and other AWS trusted accounts. The trusting account owns the resource to be accessed, and the trusted account contains the users who need access to the resource.

After you create the trust relationship, an IAM user or an application from the trusted account can use the AWS Security Token Service (AWS STS) `AssumeRole` API operation. This operation provides temporary security credentials that enable access to AWS resources in your account. For more information, see Create a role to delegate permissions to an IAM user in the *AWS Identity and Access Management User Guide*.

Follow these steps to create an IAM role with a permissions policy that allows access to Amazon EVS operations.

> **Note**
>
> Amazon EVS does not support the use of an instance profile to pass an IAM role to an EC2 instance.

Example

IAM console

1. Go the IAM console.
2. On the left menu, choose **Policies**.

3. Choose **Create policy**.
4. In the policy editor, create a permissions policy that enables Amazon EVS operations. For an example policy, see the section called "Create and manage an Amazon EVS environment". To view all available Amazon EVS actions, resources, and condition keys, see Actions in the *Service Authorization Reference*.
5. Choose **Next**.
6. Under **Policy name**, enter a meaningful policy name to identify this policy.
7. Review the permissions defined in this policy.
8. (Optional) Add tags to help identify, organize, or search for this resource.
9. Choose **Create policy**.
10. On the left menu, choose **Roles**.
11. Choose **Create role**.
12. For **Trusted entity type**, choose AWS account.
13. Under **An AWS account** , specify the account that you want to perform Amazon EVS actions and choose **Next**.
14. On the **Add permissions** page, select the permissions policy that you previously created and choose **Next**.
15. Under **Role name**, enter a meaninful name to identify this role.
16. Review the trust policy and ensure that the correct AWS account is listed as the principal.
17. (Optional) Add tags to help identify, organize, or search for this resource.
18. Choose **Create role**.

AWS CLI

1. Copy the following contents to a trust policy JSON file. For the principal ARN, replace the example AWS account ID and `service-user` name with your own AWS account ID and IAM user name.

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Principal": {
```

```
        "AWS": "arn:aws:iam::123456789012:user/service-user"
      },
      "Action": "sts:AssumeRole"
    }
  ]
}
```

2. Create the role. Replace `evs-environment-role-trust-policy.json` with your trust policy file name.

```
aws iam create-role \
  --role-name myAmazonEVSEnvironmentRole \
  --assume-role-policy-document file://"evs-environment-role-trust-policy.json"
```

3. Create a permissions policy that enables Amazon EVS operations and attach the policy to the role. Replace `myAmazonEVSEnvironmentRole` with your role name. For an example policy, see the section called “Create and manage an Amazon EVS environment”. To view all available Amazon EVS actions, resources, and condition keys, see Actions in the *Service Authorization Reference*.

```
aws iam attach-role-policy \
  --policy-arn arn:aws:iam::aws:policy/AmazonEVSEnvironmentPolicy \
  --role-name myAmazonEVSEnvironmentRole
```

Sign up for an AWS Business, AWS Enterprise On-Ramp, or AWS Enterprise Support plan

Amazon EVS requires that customers are enrolled in an AWS Business, AWS Enterprise On-Ramp, or AWS Enterprise Support plan to receive continuous access to technical support and architectural guidance. AWS Business Support is the minimum AWS Support tier that meets Amazon EVS requirements. If you have business-critical workloads, we recommend enrolling in AWS Enterprise On-Ramp or AWS Enterprise Support plans. For more information, see Compare AWS Support Plans.

> **Important**
>
> Amazon EVS environment creation fails if you do not sign up for an AWS Business, AWS Enterprise On-Ramp, or an AWS Enterprise Support plan.

Check quotas

To enable Amazon EVS environment creation, ensure that your account has the required minimum account-level quotas. For more information, see *Service quotas*.

Important

Amazon EVS environment creation fails if the host count per EVS environment quota value is not at least 4.

Plan VPC CIDR sizes

When you create an Amazon EVS environment, you are required to specify a VPC CIDR block. The VPC CIDR block cannot be changed after the environment is created, and will need to have enough space reserved to accommodate the required EVS subnets and hosts that Amazon EVS creates during environment deployment. As a result, it is critical to carefully plan out the CIDR block size, taking into account Amazon EVS requirements and your future scaling needs prior to deployment. Amazon EVS requires a VPC CIDR block with a minimum size of /22 netmask to allow sufficient space for the required EVS subnets and hosts. For more information, see the section called “Amazon EVS networking considerations”.

Important

Ensure that you have sufficient IP address space for both your VPC subnet and the VLAN subnets that Amazon EVS creates for VCF appliances. The VPC CIDR block must have a minimum size of /22 netmask to allow sufficient space for the required EVS subnets and hosts.

When you create a VPC, we recommend that you specify a CIDR block from the private IPv4 address ranges as specified in RFC 1918.

Note

Amazon EVS does not support IPv6 at this time.

Create a VPC with subnets

Amazon EVS deploys your environment into a VPC that you provide. This VPC must contain a subnet for Amazon EVS service access (service access subnet). For steps to create a VPC with subnets for Amazon EVS, see the section called "Create a VPC with subnets and route tables".

Configure the VPC main route table

Amazon EVS VLAN subnets are implicitly associated to the VPC main route table. To enable connectivity to dependent services such as DNS or on-premises systems for successful environment deployment, you must configure the main route table to allow traffic to these systems. The main route table must include a route for the VPC's CIDR. For more information about managing subnet route tables, see Manage subnet route tables in the *Amazon VPC User Guide*.

After environment deployment, you must explicitly associate each of the Amazon EVS VLAN subnets with a route table in your VPC. NSX connectivity fails if your VLAN subnets are not explicitly associated with a VPC route table. We strongly recommend that you explicitly associate your subnets with a custom route table after environment deployment. For more information, see the section called "Explicitly associate Amazon EVS VLAN subnets to a VPC route table".

Important

Amazon EVS supports the use of a custom route table only after the Amazon EVS environment is created. Custom route tables should not be used during Amazon EVS environment creation, as this may result in connectivity issues.

Gateway route requirements

Configure routes for these gateway types based on your connectivity requirements:

Note

Amazon EVS does not support direct internet gateway connectivity at this time.

- **NAT gateway (NGW)**

- Optional for outbound-only internet access.
- Must be in a public subnet with internet gateway access.
- Add routes from private subnets and EVS VLAN subnets to the NAT gateway.
- For more information, see Work with NAT gateways in the *Amazon VPC User Guide*.

- **Transit gateway (TGW)**
  - Required for on-premises connectivity via both AWS Direct Connect and AWS Site-to-Site VPN.
  - Add routes for on-premises network ranges.
  - Configure route propagation if using BGP.
  - For more information, see Transit gateways in Amazon VPC Transit Gateways in the *Amazon VPC User Guide*.

Best practices

- Document all route table configurations.
- Use consistent naming conventions.
- Regularly audit your route tables.
- Test connectivity after making changes.
- Back up route table configurations.
- Monitor route health and propagation.

For more information about working with route tables, see Configure route tables in the *Amazon VPC User Guide*.

Configure your VPC's DHCP option set

Important

Your environment deployment fails if you don't meet these Amazon EVS requirements:

- Include a primary DNS server IP address and a secondary DNS server IP address in the DHCP option set.
- Include a DNS forward lookup zone with A records for each VCF management appliance and Amazon EVS host in your deployment.

- Include a DNS reverse lookup zone with PTR records for each VCF management appliance and Amazon EVS host in your deployment.
- Configure the VPC's main route table to ensure a route to your DNS servers exist.
- Ensure that your domain name registration is valid and unexpired, and no duplicate hostnames or IP addresses exist.
- Configure your security groups and network access control lists (ACLs) to allow Amazon EVS to communicate with:
  - DNS servers over TCP/UDP port 53.
  - Host management VLAN subnet over HTTPS and SSH.
  - Management VLAN subnet over HTTPS and SSH.

Amazon EVS uses your VPC's DHCP option set to retrieve the following:

- Domain Name System (DNS) servers for host IP address resolution. Amazon EVS requires a minimum of two DNS servers in the DHCP option set.
- Domain names for DNS resolution.
- Network Time Protocol (NTP) servers for time synchronization.

You can create a DHCP option set using the Amazon VPC console or AWS CLI. For more information, see Create a DHCP option set in the *Amazon VPC User Guide*.

Configure DNS servers

DNS configuration enables hostname resolution in your Amazon EVS environment. You can:

- Configure up to four custom DNS servers.
- Create private hosted zones for internal domain resolution.

To successfully deploy an environment, your VPC's DHCP option set must have the following DNS settings:

- A primary DNS server IP address and a secondary DNS server IP address in the DHCP option set.
- A DNS forward lookup zone with A records for each VCF management appliance and Amazon EVS host in your deployment.

- A reverse lookup zone with PTR records for each VCF management appliance and Amazon EVS host in your deployment. For NTP configuration, you can use the the default Amazon NTP address `169.254.169.123`, or another IPv4 address that you prefer.

For more information about configuring DNS servers in a DHCP option set, see Create a DHCP option set.

For on-premises connectivity, we recommend the use of Route 53 private hosted zones with inbound resolvers. This setup enables hybrid DNS resolution, where you can use Route 53 for internal DNS within your VPC and integrate it with your existing on-premises DNS infrastructure. This allows resources within your VPC to resolve domain names hosted on your on-premises network, and vice versa, without requiring complex configurations. If required, you can also use your own DNS server with Route 53 outbound resolvers. For steps to configure, see Creating a private hosted zone and Forwarding inbound DNS queries to your VPC in the *Amazon Route 53 Developer Guide*.

Note

Using both Route 53 and a custom Domain Name System (DNS) server in the DHCP option set may cause unexpected behavior.

Note

If you use custom DNS domain names defined in a private hosted zone in Route 53, or use private DNS with interface VPC endpoints (AWS PrivateLink), you must set both the `enableDnsHostnames` and `enableDnsSupport` attributes to `true`. For more information, see DNS attributes for your VPC.

Troubleshoot DNS reachability issues

Amazon EVS requires a persistent connection to SDDC Manager and DNS servers in your VPC's DHCP option set to reach DNS records. If the persistent connection to SDDC Manager becomes unavailable, Amazon EVS will no longer be able to validate environment status, and you may lose environment access. For steps to troubleshoot this issue, see the section called "Reachability check failed".

Configure NTP servers

NTP servers provide the time to your network. A consistent and accurate time reference on your Amazon EC2 instance is crucial for many VCF environment tasks and processes. Time synchronization is essential for:

- System logging and auditing
- Security operations
- Distributed system management
- Troubleshooting

You can enter the IPv4 addresses of up to four NTP servers in your VPC's DHCP option set. You can specify the Amazon Time Sync Service at IPv4 address `169.254.169.123`. By default, the Amazon EC2 instances that Amazon EVS deploys use the Amazon Time Sync Service at IPv4 address `169.254.169.123`.

For more information about NTP servers, see RFC 2123. For more information about Amazon Time Sync Service, see Precision clock and time synchronization in your EC2 instance and Configure NTP on VMware Cloud Foundation Hosts in the VMware Cloud Foundation documentation.

To configure NTP settings

1. Choose your NTP source:
   - Amazon Time Sync Service (recommended)
   - Custom NTP servers
2. Add NTP servers to your DHCP options set. For more information, see Create a DHCP option set in the *Amazon VPC User Guide.*
3. Verify time synchronization.

Recommended best practices

- Use multiple NTP sources for redundancy.
- Monitor time synchronization regularly.
- Address synchronization issues promptly.

Create and configure VPC Route Server infrastructure

Amazon EVS uses Amazon VPC Route Server to to enable BGP-based dynamic routing to your VPC underlay network. You must specify a route server that shares routes to at least two route server endpoints in the service access subnet. The peer ASN configured on the route server peers must match, and the peer IP addresses must be unique.

Important

Your environment deployment fails if you don't meet these Amazon EVS requirements for VPC Route Server configuration:

- You must configure at least two route server endpoints in the service access subnet.
- When configuring Border Gateway Protocol (BGP) for the Tier-0 gateway, the VPC Route Server peer ASN value must match the NSX Edge peer ASN value.
- When creating the two route server peers, you must use a unique IP address from the NSX uplink VLAN for each endpoint. These two IP addresses will be assigned to the NSX edges during Amazon EVS environment deployment.
- When enabling Route Server propagation, you must ensure that all route tables being propagated have at least one explicit subnet association. BGP route advertisement fails if propagated route tables do not have an explicit subnet association.

Note

For Route Server peer liveness detection, Amazon EVS only supports the default BGP keepalive mechanism. Amazon EVS does not support multi-hop Bidirectional Forwarding Detection (BFD).

Prerequisites

Before you begin, you need:

- A VPC subnet for your route server.
- IAM permissions to manage VPC Route Server resources.

- A BGP ASN value for route server (Amazon-side ASN). This value must be in the range of 1-4294967295.
- A peer ASN to peer your route server with the NSX Tier-0 gateway. Peer ASN values entered in the route server and NSX Tier-0 gateway must match. The default ASN for an NSX Edge appliance is 65000.

Steps

For steps to create a VPC Route Server, see Create a route server in the *Amazon VPC User Guide*.

> **Note**
>
> If you are using a NAT gateway or a transit gateway, ensure that your route server is configured correctly to propagate NSX routes to the VPC route table(s).

> **Note**
>
> We recommend that you enable persistent routes for the route server instance with a persist duration between 1-5 minutes. If enabled, routes will be preserved in the route server's routing database even if all BGP sessions end.

> **Note**
>
> BGP connectivity status will be down until the Amazon EVS environment is deployed and operational.

Troubleshooting

If you encounter issues:

- Verify that each route table has an explicit subnet association.
- Check that the peer ASN values entered for route server and the NSX Tier-0 gateway match.
- Confirm that Route Server endpoint IP addresses are unique.

- Review route propagation status in your route tables.
- Use VPC Route Server peer logging to monitor BGP session health and troubleshoot connection issues. For more information, see Route server peer logging in the *Amazon VPC User Guide*.

Create a transit gateway for on-premises connectivity

You can configure connectivity for your on-premises data center to your AWS infrastructure using AWS Direct Connect with an associated transit gateway, or using an AWS Site-to-Site VPN attachment to a transit gateway. For more information, see the section called "(Optional) Configure on-premises network connectivity".

Create an Amazon EC2 Capacity Reservation

Amazon EVS launches Amazon EC2 i4i.metal instances that represent ESXi hosts in your Amazon EVS environment. To ensure that you have sufficient i4i.metal instance capacity available when you need it, we recommend that you request an Amazon EC2 Capacity Reservation. You can create a Capacity Reservation at any time, and you can choose when it starts. You can request a Capacity Reservation for immediate use, or you can request a Capacity Reservation for a future date. For more information, see Reserve compute capacity with EC2 On-Demand Capacity Reservations in the *Amazon Elastic Compute Cloud User Guide*.

Set up the AWS CLI

The AWS CLI is a command line tool for working with AWS services, including Amazon EVS. It is also used to authenticate IAM users or roles for access to the Amazon EVS virtualization environment and other AWS resources from your local machine. To provision AWS resources from the command line, you need to obtain an AWS access key ID and secret key to use in the command line. Then you need to configure these credentials in the AWS CLI. For more information, see Set up the AWS CLI in the *AWS Command Line Interface User Guide for Version 2*.

Create an Amazon EC2 key pair

Amazon EVS uses an Amazon EC2 key pair that you provide during environment creation to connect to your hosts. To create a key pair, follow the steps on Create a key pair for your Amazon EC2 instance in the Amazon Elastic Compute Cloud User Guide.

Prepare your environment for VMware Cloud Foundation (VCF)

Before you deploy your Amazon EVS environment, your environment must meet VMware Cloud Foundation (VCF) infrastructure requirements. For detailed VCF prerequisites, see the Planning and Preparation Workbook in the VMware Cloud Foundation product documentation.

You should also familiarize yourself with VCF 5.2.1 requirements. For more information, see the VCF 5.2.1 release notes

Note

Amazon EVS only supports VCF version 5.2.1.x at this time.

Acquire VCF license keys

To use Amazon EVS, you need to provide a VCF solution key and a vSAN license key. The VCF solution key must have at least 256 cores. The vSAN license key must have at least 110 TiB of vSAN capacity. For more information about VCF licenses, see Managing License Keys in VMware Cloud Foundation in the *VMware Cloud Foundation Administration Guide*.

Important

Use the SDDC Manager user interface to manage VCF solution and vSAN license keys. Amazon EVS requires that you maintain valid VCF solution and vSAN license keys in SDDC Manager for the service to function properly.

Note

Your VCF license will be available to Amazon EVS across all AWS Regions for license compliance. Amazon EVS does not validate license keys. To validate license keys, visit Broadcom support.

VMware HCX prerequisites

You can use VMware HCX to migrate your existing VMware-based workloads to Amazon EVS. Before you use VMware HCX with Amazon EVS, make sure that the following prerequiste tasks have been completed.

> **Note**
>
> VMware HCX is not installed in the EVS environment by default.

- Before you can use VMware HCX with Amazon EVS, minimum network underlay requirements must be met. For more information, see Network Underlay Minimum Requirements in the *VMware HCX User Guide*.
- Confirm that VMware NSX is installed and configured in the environment. For more information, see the VMware NSX Installation Guide.
- Ensure that VMware HCX is activated and installed in the environment. For more information about activating and installing VMware HCX, see About Getting Started with VMware HCX in the *Getting Started with VMware HCX Guide*.

Amazon EVS deployment prerequisite checklist

This section contains a list of prerequisites that must be completed to enable successful Amazon EVS environment deployment.

VCF license key information

Component	Description	Minimum requirements	Example value(s)
Site ID	Site ID provided by Broadcom for access to the Broadcom support portal.	Must provide a Site ID from Broadcom in the EVS environment creation request.	01234567
VCF solution key	A single VCF license key that unlocks features of the entire	Must provide a valid active VCF solution key in the	ABCDE-FGHIJ-KLMNO-PQRSTU-VWXYZ

Component	Description	Minimum requirements	Example value(s)
	VCF stack, including vSphere, NSX, SDDC Manager, and vCenter Server.	EVS environment creation request. Key cannot already be in use by an existing EVS environment.	
vSAN license key	A vSAN license key allows you to activate and use the vSAN software within a VCF environment.	Must provide a valid active vSAN license key in the EVS environment creation request. Key cannot already be in use by an existing EVS environment.	ABCDE-FGHIJ-KLMNO-PQRSTU-VWXYZ

AWS account and Region information

Component	Description	Minimum requirements	Example value(s)
AWS account ID number	The AWS account allows you to create and manage AWS resources and access AWS services.	Must must have access to an AWS account.	999999999999
AWS Region	A physical geographic area where AWS maintains multiple isolated data centers called Availability Zones.	Must specify an AWS Region for Amazon EVS to deploy into. For a list of Regions where Amazon EVS is currently available, see Amazon Elastic VMware Service	US West (Oregon)

Component	Description	Minimum requirements	Example value(s)
		endpoints and quotas in the *AWS General Reference Guide*.	

AWS Transit Gateway for on-premises data center connectivity

Component	Description	Minimum requirements	Example value(s)
transit gateway ID	A transit gateway acts as a Regional virtual router for traffic flowing between your VPC and on-premises networks.	Must use a transit gateway to connect an Amazon EVS environment to your on-premises networks.	tgw-0262a0e521EXAMPLE
Connectivity method	To connect your on-premises networks to an Amazon EVS environment, you must use a transit gateway with AWS Direct Connect or AWS Site-to-Site VPN.	Determine if you will use AWS Direct Connect, AWS Site-to-Site VPN, or a combination of both. For more information about using Site-to-Site VPN with Direct Connect, see Private IP AWS Site-to-Site VPN with AWS Direct Connect.	AWS Site-to-Site VPN with AWS Direct Connect

VPC for Amazon EVS environment

Component	Description	Minimum requirements	Example value(s)
VPC ID	A VPC is a virtual network that closely resembles a traditional network that you'd operate in your own data center.	Any Amazon VPC may be used for environment deployment.	vpc-0abcdef1234567890
VPC CIDR block	In Amazon VPC, a CIDR block defines the range of IP addresses available within your VPC.	An RFC 1918 CIDR block with a minimum size of /22 netmask. The VPC CIDR block must be appropriately sized to accommodate all of the EVS subnets and hosts to be deployed in your VPC. This CIDR block should be unique across your environments.	10.1.0.0/20

VPC subnets for EVS environment

Component	Description	Minimum requirements	Example value(s)
service access subnet ID	A service access subnet is a standard VPC subnet that enables Amazon EVS service access. For more informati	Any VPC subnet may be used, provided that the subnet is appropriate sized within the VPC. We suggest specifying	subnet-abcdef1234567890e

Component	Description	Minimum requirements	Example value(s)
	on, see the section called "Service access subnet".	a VPC subnet CIDR block with a netmask of /24.	
service access subnet CIDR	a VPC subnet CIDR block is a range of IP addresses, defined using CIDR notation, that is allocated to a specific subnet within a VPC.	The service access subnet must be appropriately sized to also accommodate the other EVS subnets and hosts to be deployed in your VPC. We suggest specifying a VPC subnet CIDR block with a netmask of /24.	10.1.0.0/24
AWS Availability Zone ID within the Region	A distinct location within an AWS Region, designed to be isolated from failures in other AZs, and consists of one or more data centers.	You can specify the Availability Zone that VPC subnets deploy into during subnet creation. For more information, see Create a subnet in the *Amazon VPC User Guide*.	us-west-2a

EVS VLAN subnets for EVS environment

Component	Description	Minimum requirements	Example value(s)
Host management VLAN CIDR	The CIDR block for the host managemen	Must have a minimum size of /28	10.1.1.0/24

Component	Description	Minimum requirements	Example value(s)
	t VLAN subnet. For more information, see the section called "Host management VLAN subnet".	netmask and a maximum size of /24 netmask. Must not overlap with any existing CIDR block that's associated with the VPC.	
vMotion VLAN CIDR	The CIDR block for the vMotion VLAN subnet. For more information, see the section called "vMotion VLAN subnet".	Must be the same size as the host management VLAN.	10.1.2.0/24
vSAN VLAN CIDR	The CIDR block for the vSAN VLAN subnet. For more information, see the section called "vSAN VLAN subnet".	Must be the same size as the host management VLAN.	10.1.3.0/24
VTEP VLAN CIDR	The CIDR block for the VTEP VLAN subnet. For more information, see xrefLconcepts-evs-vtep-vlan-subnet[].	Must be the same size as the host management VLAN.	10.1.4.0/24

Component	Description	Minimum requirements	Example value(s)
Edge VTEP VLAN CIDR	The CIDR block for the edge VTEP VLAN subnet. For more information, see the section called “Edge VTEP VLAN subnet”.	Must have a minimum size of /28 netmask and a maximum size of /24 netmask. Must not overlap with any existing CIDR block that’s associated with the VPC.	10.1.5.0/24
Management VM VLAN CIDR	The CIDR block for the Management VM VLAN subnet. For more information, see the section called “Management VM VLAN subnet”.	Must have a minimum size of /28 netmask and a maximum size of /24 netmask. Must not overlap with any existing CIDR block that’s associated with the VPC.	10.1.6.0/24
HCX uplink VLAN CIDR	The CIDR block for the HCX uplink VLAN subnet. For more information, see the section called “HCX uplink VLAN subnet”.	Must have a minimum size of /28 netmask and a maximum size of /24 netmask. Must not overlap with any existing CIDR block that’s associated with the VPC.	10.1.7.0/24

Component	Description	Minimum requirements	Example value(s)
NSX uplink VLAN CIDR	The CIDR block for the NSX uplink VLAN subnet. For more information, see the section called "NSX uplink VLAN subnet".	Must have a minimum size of /28 netmask and a maximum size of /24 netmask. Must not overlap with any existing CIDR block that's associated with the VPC.	10.1.8.0/24
Expansion VLAN 1 CIDR	CIDR block for the expansion VLAN subnet. For more information, see the section called "Expansion VLAN subnet".	Must have a minimum size of /28 netmask and a maximum size of /24 netmask. Must not overlap with any existing CIDR block that's associated with the VPC.	10.1.9.0/24
Expansion VLAN 2 CIDR	CIDR block for the expansion VLAN subnet. For more information, see the section called "Expansion VLAN subnet".	Must have a minimum size of /28 netmask and a maximum size of /24 netmask. Must not overlap with any existing CIDR block that's associated with the VPC.	10.1.10.0/24

DNS and NTP infrastructure

Component	Description	Minimum requirements	Example value(s)
Primary DNS server IP address	The main domain name system (DNS) server used as the source of truth for all of the domain's DNS records.	You can use any valid, unused IPv4 address within the usable host range.	10.1.1.10
Secondary DNS server IP address	A backup DNS server for the domain's DNS records.	You can use any valid, unused IPv4 address within the usable host range.	10.1.5.25
NTP server IP address	A network time protocol (NTP) server is a device or application that synchronizes clocks within a network using the NTP standard.	You can use the default Amazon Time Sync Service with the local `169.254.169.123` IP address, or another NTP server IP address.	169.254.169.123 (Amazon Time Sync Service)
FQDN for VCF deployment	A fully qualified domain name (FQDN) is the absolute name of a device on a network. A FQDN consists of a hostname and domain name.	A FQDN can only contain alphanumeric characters, the minus sign (-), and periods that are used as a delimiter between labels. Must be a unique FQDN that is valid and unexpired.	evs.local

VPC DHCP option set

Component	Description	Minimum requirements	Example value(s)
DHCP option set ID	A DHCP option set is a group of network settings used by resources in your VPC, such as EC2 instances, to communicate over your virtual network.	Must contain a minimum of 2 DNS servers. You can use Route 53 or custom DNS servers. Must also contain your DNS domain name and an NTP server.	dopt-0a1b2c3d

EC2 key pair

Component	Description	Minimum requirements	Example value(s)
EC2 key pair name	An EC2 key pair is a set of security credentials used to securely connect to an Amazon EC2 instance.	Key pair name must be unique.	`my-ec2-key-pair`

VPC route tables

Component	Description	Minimum requirements	Example value(s)
main route table ID	In Amazon VPC, the main route table is the default route table automatically created with the VPC, and governs	Must be configured to enable connectivity to dependent services such as DNS or on-premises systems	rtb-0123456789abcdef0

Component	Description	Minimum requirements	Example value(s)
	traffic for any VPC subnets that aren't explicitly associated with a different route table. EVS VLAN subnets are implicitly associated to your VPC's main route table when Amazon EVS creates them.	for environment deployment to be successful.	

Network access control list (ACL)

Component	Description	Minimum requirements	Example value(s)
Network ACL ID	A network access control list (ACL) allows or denies inbound or outbound traffic at the subnet level.	Must allow Amazon EVS to communicate with: • DNS servers over TCP/UDP port 53. • Host management VLAN subnet over HTTPS and SSH. • Management VM VLAN subnet over HTTPS and SSH.	acl-0f62c640e793a38a3

DNS records for VCF components

Component	Description	Minimum requirements	Example IP address	Example hostname
ESXi host 1	IP address and hostname defined in the A record and PTR record for ESXi host 1.	Amazon EVS requires a DNS forward lookup zone with A records and a reverse lookup zone with PTR records created for each ESXi host in each EVS deployment.	10.1.0.10	esxi01
ESXi host 2	IP address and hostname defined in the A record and PTR record for ESXi host 2.	Amazon EVS requires a DNS forward lookup zone with A records and a reverse lookup zone with PTR records created for each ESXi host in each EVS deployment.	10.1.0.11	esxi02
ESXi host 3	IP address and hostname defined in the A record and PTR record for ESXi host 3.	Amazon EVS requires a DNS forward lookup zone with A records and a reverse lookup zone with PTR records created for each ESXi	10.1.0.12	esxi03

Component	Description	Minimum requirements	Example IP address	Example hostname
		host in each EVS deployment.		
ESXi host 4	IP address and hostname defined in the A record and PTR record for ESXi host 4.	Amazon EVS requires a DNS forward lookup zone with A records and a reverse lookup zone with PTR records created for each ESXi host in each EVS deployment.	10.1.0.13	esxi04
vCenter Server appliance	IP address and hostname defined in the A record and PTR record for the vCenter Server appliance.	Amazon EVS requires a DNS forward lookup zone with A records and a reverse lookup zone with PTR records created for each VCF managemen t appliance in each EVS deployment.	10.1.5.10	vc01

Component	Description	Minimum requirements	Example IP address	Example hostname
NSX Manager cluster	IP address and hostname defined in the A record and PTR record for the NSX Manager cluster.	Amazon EVS requires a DNS forward lookup zone with A records and a reverse lookup zone with PTR records created for each VCF managemen t appliance in each EVS deployment.	10.1.5.11	nsx
SDDC Manager appliance	IP address and hostname defined in the A record and PTR record for the SDDC Manager appliance.	Amazon EVS requires a DNS forward lookup zone with A records and a reverse lookup zone with PTR records created for each VCF managemen t appliance in each EVS deployment.	10.1.5.12	sddcm01

Component	Description	Minimum requirements	Example IP address	Example hostname
Cloud Builder appliance	IP address and hostname defined in the A record and PTR record for the Cloud Builder appliance.	Amazon EVS requires a DNS forward lookup zone with A records and a reverse lookup zone with PTR records created for each VCF managemen t appliance in each EVS deployment.	10.1.5.13	cb01
NSX Edge 1 appliance	IP address and hostname defined in the A record and PTR record for the NSX Edge 1 appliance.	Amazon EVS requires a DNS forward lookup zone with A records and a reverse lookup zone with PTR records created for each VCF managemen t appliance in each EVS deployment.	10.1.5.14	edge01

Component	Description	Minimum requirements	Example IP address	Example hostname
NSX Edge 2 appliance	IP address and hostname defined in the A record and PTR record for the NSX Edge 2 appliance.	Amazon EVS requires a DNS forward lookup zone with A records and a reverse lookup zone with PTR records created for each VCF managemen t appliance in each EVS deployment.	10.1.5.15	edge02
NSX Manager 1 appliance	IP address and hostname defined in the A record and PTR record for the NSX Manager 1 appliance.	Amazon EVS requires a DNS forward lookup zone with A records and a reverse lookup zone with PTR records created for each VCF managemen t appliance in each EVS deployment.	10.1.5.16	nsx01

Component	Description	Minimum requirements	Example IP address	Example hostname
NSX Manager 2 appliance	IP address and hostname defined in the A record and PTR record for the NSX Manager 2 appliance.	Amazon EVS requires a DNS forward lookup zone with A records and a reverse lookup zone with PTR records created for each VCF managemen t appliance in each EVS deployment.	10.1.5.17	nsx02
NSX Manager 3 appliance	IP address and hostname defined in the A record and PTR record for the NSX Manager 3 appliance.	Amazon EVS requires a DNS forward lookup zone with A records and a reverse lookup zone with PTR records created for each VCF managemen t appliance in each EVS deployment.	10.1.5.18	nsx03

VPC Route Server infrastructure

Component	Description	Minimum requirements	Example value(s)
route server ID	Amazon EVS uses Amazon VPC Route Server to to enable BGP-based dynamic routing to your VPC underlay network.	You must specify a route server that shares routes to at least two route server endpoints in the service access subnet. The peer ASN configured on the route server and NSX Edge peer must match, and the peer IP addresses must be unique.	rs-0a1b2c3d4e5f67890
route server association	The connection between a route server and a VPC.	Your route server must be associated to your VPC.	`{ "RouteServerAssociation": { "RouteServerId": "rs-0a1b2c3d4e5f67890", "VpcId": "vpc-1", "State": "associating" } }`
BGP ASN of the VPC Route Server side (Amazon-side ASN)	The Amazon-side ASN represents the AWS side of the BGP session between the VPC route server and	This value must be unique, and in the range of 1-4294967295. AWS recommends using	65001

Component	Description	Minimum requirements	Example value(s)
	the NSX Edge peer. You specify this BGP ASN when creating the route server. For more information, see Create a route server in the *Amazon VPC User Guide*.	a private ASN in the 64512–65534 (16-bit ASN) or 4200000000–4294967294 (32-bit ASN) range.	
route server endpoint 1 ID	A route server endpoint is an AWS-managed component inside a subnet that facilitates BGP (Border Gateway Protocol) connections between your route server and your BGP peers.	Must deploy the route server endpoint into the service access subnet.	rse-0123456789abcdef0
route server peer 1 ID	The route server peer is a BGP peering session between a route server endpoint and the the device deployed in AWS (NSX Edge).	The peer ASN value specified in the route server peer must match the peer ASN value used for NSX Edge Tier-0 gateway.	rsp-0123456789abcdef0

Component	Description	Minimum requirements	Example value(s)
route server peer 1 IP address (EVS NSX Edge 1 side)	The IP address of the route server peer (`PeerAddress`).	Must use a unique unused IP address from the NSX uplink VLAN. Amazon EVS will apply this IP address to NSX Edge 1 as part of the deployment and peer with the route server endpoint peer.	10.1.7.10
route server peer 1 endpoint ENI address	The endpoint ENI IP address of the route server peer (`EndpointEniAddress`).	Automatically generated by route server on peer creation.	10.1.7.11
route server endpoint 2 ID	A route server endpoint is an AWS-managed component inside a subnet that facilitates BGP (Border Gateway Protocol) connections between your route server and your BGP peers.	Must deploy the route server endpoint into the service access subnet.	rse-fedcba9876543210f

Component	Description	Minimum requirements	Example value(s)
route server peer 2 ID (EVS NSX Edge 2 side)	The route server peer is a BGP peering session between a route server endpoint and the the device deployed in AWS (NSX Edge).	The peer ASN value specified in the route server peer must match the peer ASN value used for NSX Edge Tier-0 gateway.	rsp-fedcba9876543210f
route server peer 2 IP address	The IP address of the route server peer (`PeerAddress`).	Must use a unique IP address from the NSX uplink VLAN. Amazon EVS will apply this IP address to NSX Edge 2 as part of the deployment and peer with the route server endpoint peer.	10.1.7.200
route server peer 2 endpoint ENI address	The endpoint ENI IP address of the route server peer (`EndpointEniAddress`).	Automatically generated by route server on peer creation.	10.1.7.201

Component	Description	Minimum requirements	Example value(s)
route server propagation	Route server propagation installs the routes in the FIB on the route table you've specified.	Must specify the route table associated with your service access subnet. Amazon EVS only supports IPv4 networking at this time.	{ "RouteServerEndpoint": { "RouteServerId": "rs-1", "RouteServerEndpointId": "rse-1", "VpcId": "vpc-1", "SubnetId": "subnet-1", "State": "pending" } }
BGP ASN of the NSX peer side	BGP ASN for the NSX side of the connection.	Suggest using the NSX default ASN 65000	65000

Getting started with Amazon Elastic VMware Service

Use this guide to get started with Amazon Elastic VMware Service (Amazon EVS). You'll learn how to create an Amazon EVS environment with hosts within your own Amazon Virtual Private Cloud (VPC).

After you're finished, you'll have an Amazon EVS environment that you can use to migrate your VMware vSphere-based workloads to the AWS Cloud.

Important

To get started as simply and quickly as possible, this topic includes steps to create a VPC, and specifies minimum requirements for DNS server configuration and Amazon EVS environment creation. Before creating these resources, we recommend that you plan out your IP address space and DNS record setup that meets your requirements. You should also familiarize yourself with VCF 5.2.1 requirements. For more information, see the VCF 5.2.1 release notes.

Important

Amazon EVS only supports VCF version 5.2.1.x at this time.

Topics

Prerequisites

Before getting started, you must complete the Amazon EVS prerequisite tasks. For more information, see *Setting up Amazon Elastic VMware Service*.

Create a VPC with subnets and route tables

> **Note**
>
> The VPC, subnets, and Amazon EVS environment must all be created in the same account. Amazon EVS does not support cross-account sharing of VPC subnets or Amazon EVS environments.

1. Open the Amazon VPC console.
2. On the VPC dashboard, choose **Create VPC**.
3. For **Resources to create**, choose **VPC and more**.
4. Keep **Name tag auto-generation** selected to create Name tags for the VPC resources, or clear it to provide your own Name tags for the VPC resources.
5. For **IPv4 CIDR block**, enter an IPv4 CIDR block. A VPC must have an IPv4 CIDR block. Ensure that you create a VPC that is adequately sized to accommodate the Amazon EVS subnets. For more information, see the section called “Amazon EVS networking considerations”

   > **Note**
   >
   > Amazon EVS does not support IPv6 at this time.

6. Keep **Tenancy** as `Default`. With this option selected, EC2 instances that are launched into this VPC will use the tenancy attribute specified when the instances are launched. Amazon EVS launches bare metal EC2 instances on your behalf.
7. For **Number of Availability Zones (AZs)**, choose **1**.

> **Note**
>
> Amazon EVS only supports Single-AZ deployments at this time.

8. Expand **Customize AZs** and choose the AZ for your subnets.

> **Note**
>
> You must deploy in an AWS Region where Amazon EVS is supported. For more information about Amazon EVS Region availability, see Amazon Elastic VMware Service endpoints and quotas in the *AWS General Reference Guide*.

9. (Optional) If you need internet connectivity, for **Number of public subnets**, choose **1**.
10. For **Number of private subnets**, choose **1**. This private subnet will be used as the service access subnet that you provided to Amazon EVS during the environment creation step. For more information, see the section called "Service access subnet".
11. To choose the IP address ranges for your subnets, expand **Customize subnets CIDR blocks**.

> **Note**
>
> Amazon EVS VLAN subnets will also need to be created from this VPC CIDR space. Ensure that you leave enough space in the VPC CIDR block for the VLAN subnets that the service requires. For more information, see the section called "Amazon EVS networking considerations"

12. (Optional) To grant internet access over IPv4 to resources, for **NAT gateways**, choose **In 1 AZ**. Note that there is a cost associated with NAT gateways. For more information, see Pricing for NAT gateways.

> **Note**
>
> Amazon EVS requires the use of a NAT gateway to enable outbound internet connectivity.

13 For **VPC endpoints**, choose **None**.

> **Note**
>
> Amazon EVS does not support gateway VPC endpoints for Amazon S3 at this time. To enable Amazon S3 connectivity, you must set up an interface VPC endpoint using AWS PrivateLink for Amazon S3. For more information, see AWS PrivateLink for Amazon S3 in the *Amazon Simple Storage Service User Guide*.

14 For **DNS options**, keep the defaults selected. Amazon EVS requires your VPC to have DNS resolution capability for all VCF components.

15 (Optional) To add a tag to your VPC, expand **Additional tags**, choose **Add new tag**, and enter a tag key and a tag value.

16 Choose **Create VPC**.

> **Note**
>
> During VPC creation, Amazon VPC automatically creates a main route table and implicitly associates subnets to it by default.

Configure the VPC main route table

Amazon EVS VLAN subnets are implicitly associated to the VPC main route table. To enable connectivity to dependent services such as DNS or on-premises systems for successful environment deployment, you must configure the main route table to allow traffic to these systems. For more information, see the section called “Configure the VPC main route table”.

Important

Amazon EVS supports the use of a custom route table only after the Amazon EVS environment is created. Custom route tables should not be used during Amazon EVS environment creation, as this may result in connectivity issues.

Configure DNS and NTP servers using the VPC DHCP option set

Important

Your environment deployment fails if you don't meet these Amazon EVS requirements for VPC DHCP option set configuration:

- Include a primary DNS server IP address and a secondary DNS server IP address in the DHCP option set.
- Include a DNS forward lookup zone with A records for each VCF management appliance and Amazon EVS host in your deployment.
- Include a DNS reverse lookup zone with PTR records for each VCF management appliance and Amazon EVS host in your deployment.
- Configure the VPC's main route table to allow DNS traffic.

Amazon EVS uses your VPC's DHCP option set to retrieve the following:

- Domain Name System (DNS) servers for host IP address resolution.
- Domain names for DNS resolution.
- Network Time Protocol (NTP) servers for time synchronization. For more information about DHCP option set configuration, see the section called "Configure your VPC's DHCP option set".

(Optional) Configure on-premises network connectivity

You can configure connectivity for your on-premises data center to your AWS infrastructure using AWS Direct Connect with an associated transit gateway, or using an AWS Site-to-Site VPN attachment to a transit gateway.

To enable connectivity to on-premises systems for successful environment deployment, you must configure the VPC's main route table to allow traffic to these systems. For more information, see the section called "Configure the VPC main route table".

After the Amazon EVS environment is created, you must update the transit gateway route tables with the VPC CIDRs created within the Amazon EVS environment. For more information, see the section called "(Optional) Configure transit gateway route tables and Direct Connect prefixes for on-premises connectivity".

For more information about setting up an AWS Direct Connect connection, see AWS Direct Connect gateways and transit gateway associations. For more information about using AWS Site-to-Site VPN with AWS Transit Gateway, see AWS Site-to-Site VPN attachments in Amazon VPC Transit Gateways in the *Amazon VPC Transit Gateway User Guide*.

Note

Amazon EVS does not support connectivity via an AWS Direct Connect private virtual interface (VIF), or via an AWS Site-to-Site VPN connection that terminates directly into the underlay VPC.

Set up a VPC Route Server instance with endpoints and peers

Amazon EVS uses Amazon VPC Route Server to to enable BGP-based dynamic routing to your VPC underlay network. You must specify a route server that shares routes to at least two route server endpoints in the service access subnet. When creating the two route server peers, you must use a unique IP address from the NSX uplink VLAN for each endpoint. The peer ASN configured on the route server and NSX Edge peer must match.

Important

When enabling Route Server propagation, ensure that all route tables being propagated have at least one explicit subnet association. BGP route advertisement fails if the route table does have an explicit subnet association.

For more information about setting up VPC Route Server, see the Route Server get started tutorial.

Note

For Route Server peer liveness detection, Amazon EVS only support the default BGP keepalive mechanism. Amazon EVS does not support multi-hop Bidirectional Forwarding Detection (BFD).

Note

We recommend that you enable persistent routes for the route server instance with a persist duration between 1-5 minutes. If enabled, routes will be preserved in the route server's routing database even if all BGP sessions end. For more information, see Create a route server in the *Amazon VPC User Guide*.

Note

If you are using a NAT gateway or a transit gateway, ensure that your route server is configured correctly to propagate NSX routes to the VPC route table(s).

Create an Amazon EVS environment

Important

To get started as simply and quickly as possible, this topic includes steps to create an Amazon EVS environment with default settings. Before creating an environment, we recommend that you familiarize yourself with all settings and deploy an environment with the settings that meet your requirements. Environments can only be configured during initial environment creation. Environments cannot be modified after you've created them. For an overview of all possible Amazon EVS environment settings, see the Amazon EVS API Reference Guide.

> **Note**
>
> You environment ID will be available to Amazon EVS across all AWS Regions for VCF license compliance needs.

> **Note**
>
> Amazon EVS environments must be deployed into the same Region and Availability Zone as the VPC and VPC subnets.

Complete this step to create an Amazon EVS environment with hosts and VLAN subnets.

Example

Amazon EVS console

1. Go to the Amazon EVS console.

   > **Note**
   >
   > Ensure that the AWS Region shown in the upper right of your console is the AWS Region that you want to create your environment in. If it's not, choose the dropdown next to the AWS Region name and choose the AWS Region that you want to use.

2. In the navigation pane, choose **Environments**.
3. Choose **Create environment**.
4. On the **Validate Amazon EVS requirements** page, do the following.
   a. Check that the AWS Support requirement and the service quota requirements are met. For more information about Amazon EVS support requirements, see the section called "Sign up for an AWS Business, AWS Enterprise On-Ramp, or AWS Enterprise Support plan". For more information about Amazon EVS quota requirements, see *Service quotas*.
   b. (Optional) For **Name**, enter an environment name.
   c. For **Environment version**, choose your VCF version. Amazon EVS currently only supports version 5.2.1.x.
   d. For **Site ID**, enter your Broadcom Site ID.

e. For **VCF Solution key**, enter a VCF solution key. This license key cannot be in use by an existing environment.

> **Note**
>
> The VCF solution key must have at least 256 cores.

> **Note**
>
> Your VCF license will be available to Amazon EVS across all AWS Regions for license compliance. Amazon EVS does not validate license keys. To validate license keys, visit Broadcom support.

> **Note**
>
> Amazon EVS requires that you maintain a valid VCF solution key in SDDC Manager for the service to function properly. If you manage the VCF solution key using the vSphere Client post-deployment, you must ensure that the keys also appears in the licensing screen of the SDDC Manager user interface.

f. For **vSAN license key**, enter a vSAN license key. This license key cannot be in use by an existing environment.

> **Note**
>
> The vSAN license key must have at least 110 TiB of vSAN capacity.

> **Note**
>
> Your VCF license will be available to Amazon EVS across all AWS Regions for license compliance. Amazon EVS does not validate license keys. To validate license keys, visit Broadcom support.

> **Note**
>
> Amazon EVS requires that you maintain a valid vSAN license key in SDDC Manager for the service to function properly. If you manage the vSAN license key using the vSphere Client post-deployment, you must ensure that the keys also appears in the licensing screen of the SDDC Manager user interface.

g. For **VCF license terms**, check the box to confirm that you have purchased and will continue to maintain the required number of VCF software licenses to cover all physical processor cores in the Amazon EVS environment. Information about your VCF Software in Amazon EVS will be shared with Broadcom to verify license compliance.

h. Choose **Next**.

5. On the **Specify host details** page, complete the following steps 4 times to add 4 hosts to the environment. Amazon EVS environments require 4 hosts for initial deployment.

   a. Choose **Add host details**.

   b. For **DNS hostname**, enter the host name for the host.

   c. For **instance type**, choose the EC2 instance type.

> **Important**
>
> Do not stop or terminate EC2 instances that Amazon EVS deploys. This action results in data loss.

> **Note**
>
> Amazon EVS only supports i4i.metal EC2 instances at this time.

   d. For **SSH key pair**, choose an SSH key pair for SSH access into the host.

   e. Choose **Add host**.

6. On the **Configure networks and connectivity** page, do the following.

   a. For **VPC**, choose the VPC that you previously created.

   b. For **Service access subnet**, choose the private subnet that was created when you created the VPC.

c. For **Security group -*optional*** , you can choose up to 2 security groups that control communication between the Amazon EVS control plane and VPC. Amazon EVS uses the default security group if no security group is chosen.

> **Note**
>
> Ensure that the security groups that you choose provide connectivity to your DNS servers and Amazon EVS VLAN subnets.

d. Under **Management connectivity**, enter the CIDR blocks to be used for the Amazon EVS VLAN subnets.

> **Important**
>
> Amazon EVS VLAN subnets can only be created during Amazon EVS environment creation, and cannot be modified after the environment is created. You must ensure that the VLAN subnet CIDR blocks are properly sized before creating the environment. You will not be able to add VLAN subnets after the environment is deployed. For more information, see the section called “Amazon EVS networking considerations”.

e. Under **Expansion VLANs**, enter the CIDR blocks for additional Amazon EVS VLAN subnets that can be used to expand VCF capabilities within Amazon EVS, such as enabling NSX Federation.

> **Note**
>
> Ensure that the VLAN CIDR blocks that you provide are properly sized within the VPC. For more information, see the section called “Amazon EVS networking considerations”.

f. Under **Workload/VCF connectivity**, enter the CIDR block for the NSX uplink VLAN, and choose 2 VPC Route Server peer IDs that peer to Route Server endpoints over the NSX uplink.

> **Note**
>
> Amazon EVS requires a VPC Route Server instance that is associated with 2 Route Server endpoints and 2 Route Server peers. This configuration enables dynamic BGP-based routing over the NSX uplink. For more information, see the section called "Set up a VPC Route Server instance with endpoints and peers".

g. Choose **Next**.

7. On the **Specify Management DNS hostnames** page, do the following.

   a. Under **Management appliance DNS hostnames**, enter the DNS hostnames for the virtual machines to host VCF management appliances. If using Route 53 as your DNS provider, also choose the hosted zone that contains your DNS records.

   b. Under **Credentials**, choose whether you'd like to use the AWS managed KMS key for Secrets Manager or a customer managed KMS key that you provide. This key is used to encrypt the VCF credentials that are required to use SDDC Manager, NSX Manager, and vCenter appliances.

   > **Note**
   >
   > There are usage costs associated with customer managed KMS keys. For more information, see the AWS KMS pricing page.

   c. Choose **Next**.

8. (Optional) On the **Add tags** page, add any tags that you would like to be assigned to this environment and choose **Next**.

> **Note**
>
> Hosts created as part of this environment will receive the following tag: `DoNotDelete-EVS-<environmentid>-<hostname>`.

> **Note**
>
> Tags that are associated with the Amazon EVS environment do not propagate to underlying AWS resources such as EC2 instances. You can create tags on underlying AWS resources using the respective service console or the AWS CLI.

9. On the **Review and create** page, review your configuration and choose **Create environment**.

> **Important**
>
> During environment deployment, Amazon EVS creates the EVS VLAN subnets and implicitly associates them with the main route table. After the deployment completes, you must explicitly associate the Amazon EVS VLAN subnets with a route table for NSX connectivity purposes. For more information, see the section called "Explicitly associate Amazon EVS VLAN subnets to a VPC route table".

> **Note**
>
> Amazon EVS deploys a recent bundled version of VMware Cloud Foundation which may not include individual product updates, known as async patches. Upon completion of this deployment, we strongly recommend that you review and update individual products using Broadcom's Async Patch Tool (AP Tool) or SDDC Manager in-product LCM automation. NSX upgrades must be done outside of SDDC Manager.

> **Note**
>
> Environment creation can take several hours.

AWS CLI

1. Open a terminal session.
2. Create an Amazon EVS environment. Below is a sample `aws evs create-environment` request.

Important

Before running the `aws evs create-environment` command, check that all Amazon EVS prerequisites have been met. Environment deployment fails if prerequisites have not been met. For more information about Amazon EVS support requirements, see the section called "Sign up for an AWS Business, AWS Enterprise On-Ramp, or AWS Enterprise Support plan". For more information about Amazon EVS quota requirements, see *Service quotas*.

Important

During environment deployment, Amazon EVS creates the EVS VLAN subnets and implicitly associates them with the main route table. After the deployment completes, you must explicitly associate the Amazon EVS VLAN subnets with a route table for NSX connectivity purposes. For more information, see the section called "Explicitly associate Amazon EVS VLAN subnets to a VPC route table".

Note

Amazon EVS deploys a recent bundled version of VMware Cloud Foundation which may not include individual product updates, known as async patches. Upon completion of this deployment, we strongly recommend you review and update individual products using Broadcom's Async Patch Tool (AP Tool) or SDDC Manager in-product LCM automation. NSX upgrades must be done outside of SDDC Manager.

Note

Environment deployment can take several hours.

- For `--vpc-id`, specify the VPC that you previously created with a minimum IPv4 CIDR range of /22.

- For `--service-access-subnet-id`, specify the unique ID of the private subnet that was created when you created the VPC.
- For `--vcf-version`, Amazon EVS currently only supports VCF 5.2.1.x.
- With `--terms-accepted`, you confirm that you have purchased and will continue to maintain the required number of VCF software licenses to cover all physical processor cores in the Amazon EVS environment. Information about your VCF software in Amazon EVS will be shared with Broadcom to verify license compliance.
- For `--license-info`, enter your VCF solution key and vSAN license key.

> **Note**
>
> The VCF solution key must have at least 256 cores. The vSAN license key must have at least 110 TiB of vSAN capacity.

> **Note**
>
> Amazon EVS requires that you maintain a valid VCF solution key and vSAN license key in SDDC Manager for the service to function properly. If you manage these license keys using the vSphere Client post-deployment, you must ensure that they also appear in the licensing screen of the SDDC Manager user interface.

> **Note**
>
> The VCF solution key and vSAN license key cannot be in use by an existing Amazon EVS environment.

- For `--initial-vlans` specify the CIDR ranges for the Amazon EVS VLAN subnets that Amazon EVS creates on your behalf. These VLANs are used to deploy VCF management appliances.

> **Important**
>
> Amazon EVS VLAN subnets can only be created during Amazon EVS environment creation, and cannot be modified after the environment is created. You must

ensure that the VLAN subnet CIDR blocks are properly sized before creating the environment. You will not be able to add VLAN subnets after the environment is deployed. For more information, see the section called “Amazon EVS networking considerations”.

- For `--hosts`, specify host details for the hosts that Amazon EVS requires for environment deployment. Include DNS hostname, EC2 SSH key name, and EC2 instance type for each host.

  Important

  Do not stop or terminate EC2 instances that Amazon EVS deploys. This action results in data loss.

  Note

  Amazon EVS only supports i4i.metal EC2 instances at this time.

- For `--connectivity-info`, specify the 2 VPC Route Server peer IDs that you created in the previous step.

  Note

  Amazon EVS requires a VPC Route Server instance that is associated with 2 Route Server endpoints and 2 Route Server peers. This configuration enables dynamic BGP-based routing over the NSX uplink. For more information, see the section called “Set up a VPC Route Server instance with endpoints and peers”.

- For `--vcf-hostnames`, enter the DNS hostnames for the virtual machines to host VCF management appliances.
- For `--site-id`, enter your unique Broadcom site ID. This ID allows access to the Broadcom portal, and is provided to you by Broadcom at the close of your software contract or contract renewal.
- (Optional) For `--region`, enter the Region that your environment will be deployed into. If the Region isn’t specified, your default Region is used.

```
aws evs create-environment \
--environment-name testEnv \
--vpc-id vpc-1234567890abcdef0 \
--service-access-subnet-id subnet-01234a1b2cde1234f \
--vcf-version VCF-5.2.1 \
--terms-accepted \
--license-info "{
      \"solutionKey\": \"00000-00000-00000-abcde-11111\",
      \"vsanKey\": \"00000-00000-00000-abcde-22222\"
    }" \
   --initial-vlans "{
      \"vmkManagement\": {
        \"cidr\": \"10.10.0.0/24\"
      },
      \"vmManagement\": {
        \"cidr\": \"10.10.1.0/24\"
      },
      \"vMotion\": {
        \"cidr\": \"10.10.2.0/24\"
      },
      \"vSan\": {
        \"cidr\": \"10.10.3.0/24\"
      },
      \"vTep\": {
        \"cidr\": \"10.10.4.0/24\"
      },
      \"edgeVTep\": {
        \"cidr\": \"10.10.5.0/24\"
      },
      \"nsxUplink\": {
        \"cidr\": \"10.10.6.0/24\"
      },
      \"hcx\": {
        \"cidr\": \"10.10.7.0/24\"
      },
      \"expansionVlan1\": {
        \"cidr\": \"10.10.8.0/24\"
      },
      \"expansionVlan2\": {
          \"cidr\": \"10.10.9.0/24\"
      }
    }" \
--hosts "[
```

```
    {
      \"hostName\": \"esx01\",
      \"keyName\": \"sshKey-04-05-45\”,
      \"instanceType\": \"i4i.metal\"
    },
    {
      \"hostName\": \"esx02\",
      \"keyName\": \"sshKey-04-05-45\",
      \"instanceType\": \"i4i.metal\"
    },
    {
      \"hostName\": \"esx03\",
      \"keyName\": \"sshKey-04-05-45\",
      \"instanceType\": \"i4i.metal\"
    },
    {
      \"hostName\": \"esx04\",
      \"keyName\": \"sshKey-04-05-45\",
      \"instanceType\": \"i4i.metal\"
    }
  ]" \
--connectivity-info "{
    \"privateRouteServerPeerings\": [\"rsp-1234567890abcdef0\",\"rsp-
abcdef01234567890\"]
  }" \
  --vcf-hostnames "{
    \"vCenter\": \"vcf-vc01\",
    \"nsx\": \"vcf-nsx\",
    \"nsxManager1\": \"vcf-nsxm01\",
    \"nsxManager2\": \"vcf-nsxm02\",
    \"nsxManager3\": \"vcf-nsxm03\",
    \"nsxEdge1\": \"vcf-edge01\",
    \"nsxEdge2\": \"vcf-edge02\",
    \"sddcManager\": \"vcf-sddcm01\",
    \"cloudBuilder\": \"vcf-cb01\"
  }" \
--site-id my-site-id \
--region us-east-2
```

The following is a sample response.

```
{
    "environment": {
```

```
        "environmentId": "env-abcde12345",
        "environmentState": "CREATING",
        "stateDetails": "The environment is being initialized, this operation
 may take some time to complete.",
        "createdAt": "2025-04-13T12:03:39.718000+00:00",
        "modifiedAt": "2025-04-13T12:03:39.718000+00:00",
        "environmentArn": "arn:aws:evs:us-east-2:111122223333:environment/env-
abcde12345",
        "environmentName": "testEnv",
        "vpcId": "vpc-1234567890abcdef0",
        "serviceAccessSubnetId": "subnet-01234a1b2cde1234f",
        "vcfVersion": "VCF-5.2.1",
        "termsAccepted": true,
        "licenseInfo": [
            {
                "solutionKey": "00000-00000-00000-abcde-11111",
                "vsanKey": "00000-00000-00000-abcde-22222"
            }
        ],
        "siteId": "my-site-id",
        "connectivityInfo": {
            "privateRouteServerPeerings": [
                "rsp-1234567890abcdef0",
                "rsp-abcdef01234567890"
            ]
        },
        "vcfHostnames": {
            "vCenter": "vcf-vc01",
            "nsx": "vcf-nsx",
            "nsxManager1": "vcf-nsxm01",
            "nsxManager2": "vcf-nsxm02",
            "nsxManager3": "vcf-nsxm03",
            "nsxEdge1": "vcf-edge01",
            "nsxEdge2": "vcf-edge02",
            "sddcManager": "vcf-sddcm01",
            "cloudBuilder": "vcf-cb01"
        }
    }
}
```

Verify Amazon EVS environment creation

Example

Amazon EVS console

1. Go to the Amazon EVS console.
2. In the navigation pane, choose **Environments**.
3. Select the environment.
4. Select the **Details** tab.
5. Check that the **Environment status** is **Passed** and the **Environment state** is **Created**. This lets you know that the environment is ready to use.

> **Note**
>
> Environment creation can take several hours. If the **Environment state** still shows **Creating**, refresh the page.

AWS CLI

1. Open a terminal session.
2. Run the following command, using the environment ID for your environment and the Region name that contains your resources. The environment is ready to use when the `environmentState` is `CREATED`.

> **Note**
>
> Environment creation can take several hours. If the `environmentState` still shows `CREATING`, run the command again to refresh the output.

```
aws evs get-environment  --environment-id env-abcde12345
```

The following is a sample response.

```
{
```

```
    "environment": {
        "environmentId": "env-abcde12345",
        "environmentState": "CREATED",
        "createdAt": "2025-04-13T13:39:49.546000+00:00",
        "modifiedAt": "2025-04-13T13:40:39.355000+00:00",
        "environmentArn": "arn:aws:evs:us-east-2:111122223333:environment/env-
abcde12345",
        "environmentName": "testEnv",
        "vpcId": "vpc-0c6def5b7b61c9f41",
        "serviceAccessSubnetId": "subnet-06a3c3b74d36b7d5e",
        "vcfVersion": "VCF-5.2.1",
        "termsAccepted": true,
        "licenseInfo": [
            {
                "solutionKey": "00000-00000-00000-abcde-11111",
                "vsanKey": "00000-00000-00000-abcde-22222"
            }
        ],
        "siteId": "my-site-id",
        "checks": [],
        "connectivityInfo": {
            "privateRouteServerPeerings": [
                "rsp-056b2b1727a51e956",
                "rsp-07f636c5150f171c3"
            ]
        },
        "vcfHostnames": {
            "vCenter": "vcf-vc01",
            "nsx": "vcf-nsx",
            "nsxManager1": "vcf-nsxm01",
            "nsxManager2": "vcf-nsxm02",
            "nsxManager3": "vcf-nsxm03",
            "nsxEdge1": "vcf-edge01",
            "nsxEdge2": "vcf-edge02",
            "sddcManager": "vcf-sddcm01",
            "cloudBuilder": "vcf-cb01"
        },
        "credentials": []
    }
}
```

Explicitly associate Amazon EVS VLAN subnets to a VPC route table

Explicitly associate each of the Amazon EVS VLAN subnets with a route table in your VPC. This route table is used to allow AWS resources to communicate with virtual machines on NSX network segments, running with Amazon EVS.

Example

Amazon VPC console

1. Go to the VPC console.
2. In the navigation pane, choose **Route tables**.
3. Choose the route table that you want to associate with Amazon EVS VLAN subnets.
4. Select the **Subnet associations** tab.
5. Under **Explicit subnet associations**, select **Edit subnet associations**.
6. Select all of the Amazon EVS VLAN subnets.
7. Choose **Save associations**.

AWS CLI

1. Open a terminal session.
2. Identify the Amazon EVS VLAN subnet IDs.

```
aws ec2 describe-subnets
```

3. Associate your Amazon EVS VLAN subnets with a route table in your VPC.

```
aws ec2 associate-route-table \
--route-table-id rtb-0123456789abcdef0 \
--subnet-id subnet-01234a1b2cde1234f
```

(Optional) Configure transit gateway route tables and Direct Connect prefixes for on-premises connectivity

If you are configuring on-premises network connectivity using AWS Direct Connect or AWS Site-to-Site VPN with a transit gateway, you must update the transit gateway route tables with the VPC CIDRs created within the Amazon EVS environment. For more information, see Transit gateway route tables in Amazon VPC Transit Gateways.

If you are using AWS Direct Connect, you may need to also update your Direct Connect prefixes to send and receive updated routes from the VPC. For more information, see Allows prefixes interactions for AWS Direct Connect gateways.

Create a network ACL to control Amazon EVS VLAN subnet traffic

Amazon EVS uses a network access control list (ACL) to control traffic to and from Amazon EVS VLAN subnets. You can use the default network ACL for your VPC, or you can create a custom network ACL for your VPC with rules that are similar to the rules for your security groups to add a layer of security to your VPC. For more information, see Create a network ACL for your VPC in the *Amazon VPC User Guide*.

> **Important**
>
> EC2 security groups do not function on elastic network interfaces that are attached to Amazon EVS VLAN subnets. To control traffic to and from Amazon EVS VLAN subnets, you must use a network access control list.

Retrieve VCF credentials and access VCF management appliances

Amazon EVS uses AWS Secrets Manager to create, encrypt, and store managed secrets in your account. These secrets contain the VCF credentials needed to install and access VCF management appliances such as vCenter Server, NSX, and SDDC Manager, as well as the ESXi root password. For more information about retrieving secrets, see Get secrets from AWS Secrets Manager in the *AWS Secrets Manager User Guide*.

Note

Amazon EVS does not provide managed rotation of your secrets. We recommend that you rotate your secrets regularly on a set rotation window to ensure that secrets are not long-lived.

After you have retrieved your VCF credentials from AWS Secrets Manager, you can use them to log into your VCF management appliances. For more information, see Log in to the SDDC Manager User Interface and How to Use and Configure Your vSphere Client in the VMware product documentation.

Configure the EC2 Serial Console

By default, Amazon EVS enables the ESXi Shell on newly deployed Amazon EVS hosts. This configuration allows access to the Amazon EC2 instance's serial port through the EC2 serial console, which you can use to troubleshoot boot, network configuration, and other issues. The serial console does not require your instance to have any networking capabilities. With the serial console, you can enter commands to a running EC2 instance as if your keyboard and monitor are directly attached to the instance's serial port.

The EC2 serial console can be accessed using the EC2 console or the AWS CLI. For more information, see EC2 Serial Console for instances in the *Amazon EC2 User Guide*.

Note

The EC2 serial console is the only Amazon EVS supported mechanism to access the Direct Console User Interface (DCUI) to interact with an ESXi host locally.

Note

Amazon EVS disables remote SSH by default. For more information about enabling SSH to access the remote ESXi Shell, see Remote ESXi Shell Access with SSH in the VMware vSphere product documentation.

Connect to the EC2 Serial Console

To connect to the EC2 serial console and use your chosen tool for troubleshooting, certain prerequisite tasks must be completed. For more information, see Prerequisites for the EC2 Serial Console and Connect to the EC2 Serial Console in the *Amazon EC2 User Guide*.

> **Note**
>
> To connect to the EC2 serial console, your EC2 instance state must be `running`. You can't connect to the serial console if the instance is in the `pending`, `stopping`, `stopped`, `shutting-down`, or `terminated` state. For more information about instance state changes, see Amazon EC2 instance state change in the *Amazon EC2 User Guide*.

Configure access to the EC2 Serial Console

To configure access to the EC2 serial console, you or your administrator must grant serial console access at the account level and then configure IAM policies to grant access to your users. For Linux instances, you must also configure a password-based user on every instance so that your users can use the serial console for troubleshooting. For more information, see Configure access to the EC2 Serial Console in the *Amazon EC2 User Guide*.

Clean up

Follow these steps to delete the AWS resources that were created.

Delete the Amazon EVS hosts and environment

Follow these steps to delete the Amazon EVS hosts and environment. This action deletes the VMware VCF installation that runs in your Amazon EVS environment.

> **Note**
>
> To delete an Amazon EVS environment, you must first delete all hosts within the environment. An environment cannot be deleted if there are hosts associated with the environment.

Example

Amazon EVS console

1. Go to the Amazon EVS console.
2. In the navigation pane, choose **Environment**.
3. Select the environment that contains the hosts to delete.
4. Select the **Hosts** tab.
5. Select the host and choose **Delete** within the **Hosts** tab. Repeat this step for each host in the environment.
6. At the top of the **Environments** page, choose **Delete** and then **Delete environment**.

> **Note**
>
> Environment deletion also deletes the Amazon EVS VLAN subnets and AWS Secrets Manager secrets that Amazon EVS created. AWS resources that you create are not deleted. These resources may continue to incur costs.

7. If you have Amazon EC2 Capacity Reservations in place that you no longer require, ensure that you've canceled them. For more information, see Cancel a Capacity Reservation in the *Amazon EC2 User Guide*.

AWS CLI

1. Open a terminal session.
2. Identify the environment that contains the host to delete.

```
aws evs list-environments
```

The following is a sample response.

```
{
    "environmentSummaries": [
        {
            "environmentId": "env-abcde12345",
            "environmentName": "testEnv",
            "vcfVersion": "VCF-5.2.1",
            "environmentState": "CREATED",
```

```
            "createdAt": "2025-04-13T14:42:41.430000+00:00",
            "modifiedAt": "2025-04-13T14:43:33.412000+00:00",
            "environmentArn": "arn:aws:evs:us-east-2:111122223333:environment/env-
abcde12345"
        },
        {
            "environmentId": "env-edcba54321",
            "environmentName": "testEnv2",
            "vcfVersion": "VCF-5.2.1",
            "environmentState": "CREATED",
            "createdAt": "2025-04-13T13:39:49.546000+00:00",
            "modifiedAt": "2025-04-13T13:52:13.342000+00:00",
            "environmentArn": "arn:aws:evs:us-east-2:111122223333:environment/env-
edcba54321"
        }
    ]
}
```

3. Delete the hosts from the environment. Below is a sample `aws evs delete-environment-host` request.

> **Note**
>
> To be able to delete an environment, you must first delete all of the hosts that are contained in the environment.

```
aws evs delete-environment-host \
--environment-id env-abcde12345 \
--host esx01
```

4. Repeat the previous steps to delete the remaining hosts in your environment.
5. Delete the environment.

```
aws evs delete-environment --environment-id env-abcde12345
```

> **Note**
>
> Environment deletion also deletes the Amazon EVS VLAN subnets and AWS Secrets Manager secrets that Amazon EVS created. Other AWS resources that you create are not deleted. These resources may continue to incur costs.

6. If you have Amazon EC2 Capacity Reservations in place that you no longer require, ensure that you've canceled them. For more information, see Cancel a Capacity Reservation in the *Amazon EC2 User Guide*.

Delete the VPC Route Server components

For steps to delete the Amazon VPC Route Server components that you created, see Route Server cleanup in the *Amazon VPC User Guide*.

Delete the network access control list (ACL)

For steps to delete a network access control list, see Delete a network ACL for your VPC in the *Amazon VPC User Guide*.

Delete elastic network interfaces

For steps to delete elastic network interfaces, see Delete a network interface in the *Amazon EC2 User Guide*.

Disassociate and delete subnet route tables

For steps to disassociate and delete subnet route tables, see Subnet route tables in the *Amazon VPC User Guide*.

Delete subnets

Delete the VPC subnets, including the service access subnet. For steps to delete VPC subnets, see Delete a subnet in the *Amazon VPC User Guide*.

Note

If you're using Route 53 for DNS, remove the inbound endpoints before you attempt to delete the service access subnet. Otherwise, you will not be able to delete the service access subnet.

Note

Amazon EVS deletes the VLAN subnets on your behalf when the environment is deleted. Amazon EVS VLAN subnets can only be deleted when the environment is deleted.

Delete the VPC

For steps to delete the VPC, see Delete your VPC in the *Amazon VPC User Guide*.

Next steps

Migrate your workloads to Amazon EVS using VMware Hybrid Cloud Extension (VMware HCX). For more information, see *Migration*.

Migrate workloads to Amazon EVS using VMware Hybrid Cloud Extension (VMware HCX)

After you have created an Amazon EVS environment, you can migrate your existing VMware-based workloads to Amazon Elastic VMware Service (Amazon EVS) using VMware Hybrid Cloud Extension (VMware HCX). For more information about VMware HCX migration, see VMware HCX Migration Types in the *VMware HCX User Guide*.

The following tutorial describes how to use VMware HCX to migrate a VMware workload to Amazon EVS.

You can use VMware HCX to migrate workloads over a private connection using AWS Direct Connect with an associated transit gateway, or using an AWS Site-to-Site VPN attachment to a transit gateway.

> **Note**
>
> Amazon EVS does not support connectivity via an AWS Direct Connect private virtual interface (VIF), or via an AWS Site-to-Site VPN connection that terminates directly into the underlay VPC.

For more information about setting up an AWS Direct Connect connection, see AWS Direct Connect gateways and transit gateway associations in the *AWS Direct Connect User Guide*. For more information about using AWS Site-to-Site VPN with AWS Transit Gateway, see AWS Site-to-Site VPN attachments in Amazon VPC Transit Gateways in the *Amazon VPC Transit Gateway User Guide*.

Prerequisites

Before using VMware HCX with Amazon EVS, ensure that HCX prerequisites have been met and an Amazon EVS environment has been created and connected to your on-premises network using either AWS Direct Connect with a transit gateway or AWS Site-to-Site VPN with a transit gateway. For steps to create an Amazon EVS environment, see *Getting started*. For more information about VMware HCX prerequisites, see the section called “VMware HCX prerequisites”.

Check the status of the HCX VLAN subnet

Follow these steps to check that the HCX VLAN subnet is properly configured.

Example

Amazon EVS console

1. Go to the Amazon EVS console.
2. In the navigation pane, choose **Environments**.
3. Select the Amazon EVS environment.
4. Select the **Networks and connectivity** tab.
5. Under **VLANs**, identify the HCX VLAN and check that the **State** is **Created**.
6. Copy the HCX `vlan` ID for later use.

AWS CLI

1. Run the following command, using the environment ID for your environment and the Region name that contains your resources.

```
aws evs list-environment-vlans  --region <region-name> --environment-id env-
abcde12345
```

The following is a sample response.


```
{
 "environmentVlans": [
        {
            "vlan": 80,
            "cidr": "10.10.7.0/24",
            "availabilityZone": "us-east-2c",
            "functionName": "hcx",
            "createdAt": "2025-04-13T13:39:58.845000+00:00",
            "modifiedAt": "2025-04-13T13:47:57.067000+00:00",
            "vlanState": "CREATED",
            "stateDetails": ""
        },
        {
            "vlan": 20,
```

```
            "cidr": "10.10.1.0/24",
            "availabilityZone": "us-east-2c",
            "functionName": "vmManagement",
            "createdAt": "2025-04-13T13:39:58.456000+00:00",
            "modifiedAt": "2025-04-13T13:47:57.524000+00:00",
            "vlanState": "CREATED",
            "stateDetails": ""
        }
 ]
}
```


2. Identify the VLAN with a `functionName` of `hcx` and check that the `vlanState` is `CREATED`.
3. Copy the HCX `vlan` ID for later use.

Check that the HCX VLAN subnet is associated with a network ACL

Follow these steps to check that the HCX VLAN subnet is associated with a network ACL. For more information about network ACL association, see the section called “Create a network ACL to control Amazon EVS VLAN subnet traffic”.

Example

Amazon VPC console

1. Go to the Amazon VPC console.
2. In the navigation pane, choose **Network ACLs**.
3. Select the network ACL that your VLAN subnets are associated with.
4. Select the **Subnet associations** tab.
5. Check that the HCX VLAN subnet is listed among the associated subnets.

AWS CLI

1. Run the following command, using the HCX VLAN subnet ID in the `Values` filter.

```
aws ec2 describe-network-acls --filters "Name=subnet-id,Values=subnet-
abcdefg9876543210"
```

2. Check that the correct network ACL is returned in the response.

Create a distributed port group with the HCX public uplink VLAN ID

Go to the vSphere Client interface and follow the steps in Add a Distributed Port Group to add a distributed port group to a vSphere Distributed Switch.

When configuring failback within the vSphere Client interface, ensure that uplink1 is an active uplink and uplink2 is a standby uplink to enable Active/Standby failover. For the VLAN setting in the vSphere Client interface, enter the HCX VLAN ID that you previously identified.

(Optional) Set up HCX WAN Optimization

The HCX WAN Optimization service (HCX-WAN-OPT) improves the performance characteristics of private lines or internet path by applying WAN optimization techniques like data reduction and WAN path conditioning. The HCX WAN Optimization service is recommended on deployments that are not able to dedicate 10Gbit paths for migrations. In 10Gbit, low latency deployments, using WAN Optimization may not yield improved migration performance. For more information, see VMware HCX Deployment Considerations and Best Practices.

The HCX WAN Optimization service is deployed in conjunction with the HCX WAN Interconnect service appliance (HCX-WAN-IX). HCX-WAN-IX is responsible for data replication between the enterprise environment and the Amazon EVS environment.

To use the HCX WAN Optimization service with Amazon EVS, you need to use a distributed port group on the HCX VLAN subnet. Use the distributed port group that was created in the earlier step.

(Optional) Enable HCX Mobility Optimized Networking

HCX Mobility Optimized Networking (MON) is a feature of the HCX Network Extension Service. MON-enabled network extensions improve traffic flows for migrated virtual machines by enabling selective routing within your Amazon EVS environment. MON allows you to configure the optimal path for migrating workload traffic to Amazon EVS, avoiding a long round-trip network path through the source gateway. This feature is available for all Amazon EVS deployments. For more information, see Configuring Mobility Optimized Networking in the VMware HCX User Guide.

Important

Before your enable HCX MON, read the following limitations and unsupported configurations for HCX Network Extension.
Restrictions and Limitations for Network Extension
Restrictions and Limitations for Mobility Optimized Networking Topologies

Important

Before you enable HCX MON, make sure that in the NSX interface you've configured route redistribution for the destination network CIDR. For more information, see Configure BGP and Route Redistribution in the VMware NSX documentation.

Verify HCX connectivity

VMware HCX includes built-in diagnostic tools that can be used to test connectivity. For more information, see VMware HCX Troubleshooting in the *VMware HCX User Guide*.

Managing Amazon EVS environments

This chapter includes the following topics to help you manage your environment.

- the section called “VCF subscriptions” - Describes how VCF subscriptions works with Amazon EVS and customer responsibilities for VCF subscription management.
- the section called “Lifecycle management” - Describes lifecycle management responsibilities within an Amazon EVS environment, including the underlying infrastructure management, VCF upgrade management, the ESXi host lifecyle management.
- the section called “Environment maintenance” - Describes how to perform common maintenance tasks for your Amazon EVS environment, including networking configuration, ESXi host maintenance, checking environment status, and managing secret rotation schedules for your VCF credentials.
- the section called “Create host” - Describes how to create an Amazon EVS host after the environment deploys and add the host to the cluster.
- the section called “Delete host” - Describes how to delete an Amazon EVS host and remove it from the cluster.

VCF subscriptions

> **Note**
>
> Amazon EVS does not support perpetual vSphere licenses. You must have a valid and active VMware Cloud Foundation subscription to use Amazon EVS.

Amazon EVS uses VMware Cloud Foundation (VCF) subscriptions with license portability entitlements that you bring to AWS (BYOS). To successfully deploy an Amazon EVS environment, you need to provide a valid VCF solution key and a vSAN license key in the environment creation request. The vSphere license key serves as the solution key for VCF. Each VCF license key can be used for only one Amazon EVS environment. Environment creation fails if you attempt to use a VCF license key that is already in use in another environment.

Your VCF solution key must have at least 256 cores to provide adequate core capacity for the four initial EC2 i4i.metal hosts that Amazon EVS deploys upon environment creation. Each

i4i.metal host requires 64 cores. The vSAN license key must have at least 110 TiB of vSAN capacity. Environment creation fails if you attempt to use undersized license keys.

Note

Your VCF subscription will be available to Amazon EVS across all AWS Regions for license compliance. Amazon EVS does not validate license keys. To validate license keys, visit Broadcom support.

Note

Information about your VCF software in Amazon EVS will be shared with Broadcom to verify license compliance.

Subscription management

You are responsible for managing your VCF subscriptions. Your VCF subscriptions must be managed in SDDC Manager. Removing your license keys from SDDC Manager or replacing them with an in-use license key will result in a failed environment status check, preventing you from adding hosts to your Amazon EVS environment. For more information about environment status checks, see the section called “Monitor environment status” and the section called “Troubleshoot failed environment status checks”. For more information about VCF license keys, see Managing License Keys in VMware Cloud Foundation in the VMware Cloud Foundation documentation.

Important

Use the SDDC Manager user interface to manage VCF solution and vSAN license keys. Amazon EVS requires that you maintain valid VCF solution and vSAN license keys in SDDC Manager for the service to function properly. While keys must be assigned to your hosts and vSAN cluster using the vSphere Client, you must make sure that those keys also appear in the licensing screen of the SDDC Manager user interface.

Adding VCF license keys

In the Broadcom support portal, you can purchase additional VCF license keys, split license keys if you already have large keys, or merge multiple license keys. This allows you to license hosts that you added to your environment after initial deployment, or license additional environments. Make sure that purchased license keys are added in the vCenter Sever and SDDC Manager inventory. If adding hosts, ensure that your licenses are assigned to the correct hosts in vSphere and have adequate cores and vSAN storage capacity. Amazon EVS does not support unlicensed hosts. For more information, see Configuring License Settings for Assets in the vSphere Client in the VMware documentation.

New unexpired license keys must be assigned to vCenter Server before the license key's evaluation period expires to remain active. Active license keys are required to successfully set up an Amazon EVS environment. You environment will fail to deploy if an expired license key is provided. For more information about VCF license key creation, see Create a New License in the VMware documentation. If you are experiencing issues with your added license keys, see the section called "Key coverage check failed".

Removing VCF license keys

You can remove VCF license keys from the SDDC Manager inventory to reduce your core and vSAN capacity after deleting hosts in your environment. To remain in compliance with the licensing models of products that you use with vSphere, you must remove all unassigned license keys from the inventory. If you have split, merged, or upgraded license keys in the Broadcom Support Portal, you must remove the old license keys. For more information, see Remove a license in the VMware documentation.

Amazon EVS environment lifecycle management

This page describes your lifecycle management responsibilities within an Amazon EVS environment.

A key benefit of Amazon EVS is that you have complete control over your VMware architecture in the cloud. You can optimize the VMware Cloud Foundation (VCF) software stack to meet the unique demands of your applications. Because Amazon EVS is a self-managed service, you are responsible for the lifecycle management and maintenance of the VMware software used in the Amazon EVS environment, such as ESXi, vSphere, vSAN, NSX, and SDDC Manager. You are also

responsible for maintaining any third-party integrations, such as data protection solutions that you integrate into your Amazon EVS hosts.

You are responsible for the configuration of the underlying AWS networking components that Amazon EVS uses, including VPC route tables, security group and network access control list (ACL) rules, VPC Route Server configuration, internet gateways, NAT gateways, and transit gateways (for on-premises connectivity).

AWS is responsible for deploying the Amazon EVS environment with networking configurations that you provide. Environment deployment includes the following:

- Bootstrapping the network configuration of your Amazon EVS environment.
- Enabling north-south routing with the VPC Route Server instance you provide.
- Deploying the required EVS VLAN subnets, elastic network interfaces, and four initial ESXi hosts.
- Configuring an NSX overlay network with a Tier-0 gateway and a Tier-1 gateway.
- Deploying an NSX Edge cluster with two NSX Edge nodes in Active/Standby mode.
- Creating and configuring the initial vSAN cluster and mounting the datastore.

You are responsible for VMware NSX configuration, including network segments, distributed firewall rules, and load balancers. You are also responsible for the configuration of any integrated solutions that you implement with Amazon EVS after the EVS environment deploys, including VMware HCX configuration and additional NSX Tier-1 gateways.

For more information about AWS and customer responsibilities, see the AWS shared responsibility model.

> **Note**
>
> A Tier-0 gateway and a Tier-1 gateway is created and configured as part of Amazon EVS environment deployment. Amazon EVS only supports a single Tier-0 gateway at this time. Any modification to these logical routers or the NSX edge node VMs could affect connectivity and should be avoided.

VMware software updates

Warning

If you have updated your ESXi version after the Amazon EVS environment deployment, SDDC manager may fail during VCF host validation in the commission hosts step. For steps to troubleshoot this issue, see the section called "SDDC Manager fails VCF host validation during host commissioning".

Amazon EVS only supports VMware Cloud Foundation (VCF) 5.2.1.x at this time. Per the AWS shared responsibility model, you are responsible for applying any patches, updates, or upgrades to VCF software, including ESXi, vCenter Server, vSAN, NSX, SDDC Manager, and other integrated solutions, in your EVS environment. Post-deployment, we recommend that you review the VCF software version deployed by Amazon EVS and update as needed. You can obtain VCF updates through the Broadcom support portal. We also recommend that you establish and adhere to a regular maintenance schedule for updates and patches.

Note

Amazon EVS does not support VMware Cloud Foundation 9 at this time.

Certain patches, updates, or upgrade may have impact on workloads running in your environment. Before patching, updating, or upgrading your VCF software, we recommend that you review the VCF Lifecycle Management Guide to understand how these changes will impact your environment. We also recommend that you test changes in a staging environment before deploying to production. You can review the VCF 5.2.1 Release Notes to understand the latest VCF 5.2.1 updates.

ESXi host lifecyle and maintenance

You are responsible for ESXi host lifecycle management and maintenance within the Amazon EVS environment, including monitoring host health and remediating host issues. For more information, see the section called "Environment maintenance".

AWS performs scheduled maintenance on the underlying i4i.metal EC2 instances to ensure reliability, availability, and performance of the infrastructure. For more information, see the section called "About AWS scheduled maintenance for EC2 instances".

Performing maintenance on your environment

This section describes how to perform common maintenance tasks for your Amazon EVS environment.

Topics

Monitor your environment's status and resources

You can monitor various aspects of your Amazon EVS environment and underlying AWS resources using the Amazon EVS console or AWS CLI.

> **Note**
>
> VMware Cloud Foundation (VCF) components are monitored in SDDC Manager. You cannot monitor VCF components using the Amazon EVS console or AWS CLI. For information about using SDDC Manager to monitor VMware Cloud Foundation (VCF) components, see Getting started with SDDC Manager.

View environment status and resources

The environment status helps you determine if your environment is experiencing issues that require attention. Follow this procedure to check your environment's status and view underlying resources.

Example

Amazon EVS console

1. Open the Amazon EVS console.

2. In the navigation pane, choose **Environments**.
3. Choose your environment ID to open the environment details page.
4. Under **Details**, view the **Environment status**.

   If your environment is healthy, the status shows as **Passed**. If there are issues, the status shows as **Failed**. When the status is **Failed**, you can view a popover that shows the results of four environment status checks:

   - **Key re-use** - Shows **Passed** or **Failed** to indicate if the VCF license key is valid.
   - **Host count** - Shows **Unknown**, **Passed**, or **Failed** to indicate the status of host connectivity.
   - **Key coverage** - Shows **Passed** or **Failed** to indicate if the VCF license key covers all hosts.
   - **Reachability** - Shows **Passed** or **Failed** to indicate reachability to SDDC Manager.

     For information about troubleshooting environment status check failures, see *Troubleshooting*.

     To view the resources in your environment

     Choose one of the following tabs:

   - **Hosts** - Shows the hosts in your environment.
   - **Networks & connectivity** - Shows the VPC, EVS subnets, and VPC Route Server resources associated with your environment.
   - **Management appliances** - Shows the VCF management appliances in your environment with their DNS hostnames and related credentials.
   - **Tags** - Shows the tags associated with your environment.

AWS CLI

You can use the AWS CLI to check your environment status and resources.

To list all environments and their status

```
aws evs list-environments
```

> **Tip**
>
> Use the `--query` parameter to filter the output. For example:

```
aws evs list-environments --query 'Environments[*].[EnvironmentId,Status]'
```

To list environment hosts

```
aws evs list-environment-hosts \
    --environment-id environment-id
```

To list environment VLANs

```
aws evs list-environment-vlans \
    --environment-id environment-id
```

For more information about the API operations, see the following in the *Amazon EVS API Reference Guide*:

- ListEnvironments
- ListEnvironmentHosts
- ListEnvironmentVlans

AMI maintenance

Amazon EVS deploys ESXi hosts with a custom EVS Amazon Machine Image (AMI). The AMI contains a custom vendor add-on containing the required packages for running ESXi on Amazon EC2.

Troubleshoot add host failure due to incompatible cluster image

When you add a host to your environment, the host has the latest available version of the EVS custom vendor add-on. If your environment uses hosts with an older add-on version, adding new hosts fails with an error that the new host is not compatible with your cluster image. For detailed steps to fix this issue, see the section called “Add host failure due to incompatible cluster image”.

Amazon EVS host maintenance

Because Amazon EVS is a self-managed service, you are responsible for maintenance of the VMware Cloud Foundation (VCF) software that runs on the host, monitoring host health, and

remediating host issues, including host replacement in the event of host failure. For more information about managing ESXi hosts in VMware Cloud Foundation (VCF), see Host Management in the VMware Cloud Foundation documentation.

Checking health of the underlying EC2 instance

Amazon EC2 performs automated checks on every running EC2 instance to identify hardware and software issues. You can view the results of these status checks in the EC2 console or AWS CLI to identify specific and detectable problems. For more information, see View status checks for Amazon EC2 instance in the *Amazon EC2 User Guide* and describe-instance-status in the *AWS CLI Command Line Reference*.

You can create a CloudWatch alarm to warn you if status checks fail on a specific instance. For more information, see Create CloudWatch alarms for Amazon EC2 instances that fail status checks om tje *Amazon EC2 User Guide*.

About AWS scheduled maintenance for EC2 instances

AWS performs scheduled maintenance on the underlying EC2 instances to ensure reliability, availability, and performance. EC2 bare metal instances are subject to the same types of scheduled events as other EC2 instances. AWS can schedule events to reboot, stop, and retire your instances due to underlying hardware issues or scheduled maintenance. These events do not occur frequently. For more information, see Types of scheduled events in the *Amazon EC2 User Guide*.

> **Note**
>
> You should place your hosts in maintenance mode in the vSphere Client before any scheduled reboot event.

If one of your instances will be affected by a scheduled event, AWS notifies you in advance by email, using the email address that's associated with your AWS account. AWS also sends an AWS Health event, which you can monitor and manage by using Amazon EventBridge. For more information, see Monitoring events in AWS Health with Amazon EventBridge and Scheduled events for Amazon EC2 instances in the *Amazon EC2 User Guide*.

At any time, you can reschedule the event so that it occurs at a specific date and time that suits you. The event can be rescheduled up to the event deadline date. For more information, see Reschedule a scheduled event for an EC2 instance in the *Amazon EC2 User Guide*.

Using EC2 On-Demand Capacity Reservations

You can use EC2 On-Demand Capacity Reservations to ensure that your cluster has sufficient capacity during maintenance periods. You can reserve capacity in a specific Availabilty Zones for any duration. For more information, see Reserve compute capacity with EC2 On-Demand Capacity Reservations in the *Amazon EC2 User Guide*.

For steps to create a Capacity Reservation, see Create a Capacity Reservation in the *Amazon EC2 User Guide*.

> **Note**
>
> If you use EC2 On-Demand Capacity Reservations or EC2 Dedicated Hosts, we recommend that you retain a spare host for mission-critical workloads. While Capacity Reservations ensure you have access to a specific amount of EC2 instance capacity in a given Availability Zone, having a spare host provides an additional layer of redundancy that is crucial for mission-critical workloads. For Dedicated Hosts, having a spare host ensures that you maintain the environment for mission-critical workloads, even if a primary host requires maintenance or experiences an issue.

Preparing for AWS scheduled `system-maintenance` and `instance-retirement` events

AWS schedules two types of `system-maintenance` events: network maintenance and power maintenance.

- During network maintenance, scheduled instances lose network connectivity for a brief period of time. Normal network connectivity to your instance is restored after maintenance is complete.
- During power maintenance, scheduled instances are taken offline for a brief period, and then rebooted. When a reboot is performed on EC2 bare metal instances, instance store volume data is not preserved.

AWS schedules EC2 `instance-retirement` events when degradation of the underlying hardware hosting your EC2 instances is detected.

To remediate `system-maintenance` and `instance-retirement` events, replace the failed host with a new host using the Amazon EVS console or AWS CLI and SDDC Manager before the

maintenance event occurs. If you wait for the maintenance event to occur and an EC2 instance reboot is required, you will lose your vSAN data that is stored on the instance store volume. For detailed steps, see the section called "Replace an Amazon EVS host".

Important

The EC2 console should not be used to manage the state of your Amazon EVS hosts, including, stop, start, and termination. Do not attempt to start, stop, or terminate the EC2 instances that Amazon EVS deploys. This action results in vSAN data loss.

Replace an Amazon EVS host

Follow this procedure to a replace an Amazon EVS host.

Warning

Amazon EVS hosts use a custom vendor add-on to provide important host functionality. When you add a host to your environment, it will have the latest available version of the Amazon EVS custom add-on. If your environment uses hosts with an older add-on version, adding host to your vSphere cluster will cause cluster image remediation to fail. For steps to troubleshoot this issue, see the section called "Troubleshoot add host failure due to incompatible cluster image".

Warning

If you have updated your ESXi version post-deployment, SDDC manager may fail during VCF host validation in the commission hosts step. For steps to troubleshoot this issue, see the section called "SDDC Manager fails VCF host validation during host commissioning".

Note

Ensure that your Amazon EVS host count per EVS environment quota is correctly set to ensure successfully host creation. Host creation fails if this quota value is less than the number of hosts that you are attempting to provision within a single Amazon EVS

environment. You may need to request a quota increase for maintenance operations that require host replacement. For more information, see *Service quotas*.

Example

Amazon EVS console and SDDC Managuer UI

1. Go to the Amazon EVS console.
2. In the navigation pane, choose **Environment**.
3. Select the environment that contains the host to be replaced.
4. Select the **Hosts** tab.
5. Choose **Create host**.
6. Specify host details and choose **Create host**.
7. To verify completion, check that the **Host state** has changed to **Created**.
8. Retrieve the credentials for the ESXi root password from AWS Secrets Manager. For more information about retrieving secrets, see Get secrets from AWS Secrets Manager in the *AWS Secrets Manager User Guide*.
9. Go to SDDC Manager.
10. Commission the new host in SDDC Manager, using the ESXi root credentials that you retrieved in a previous step. For more information, see Commission Hosts in the VMware Cloud Foundation documentation.
11. Add the new host to the cluster. For more information, see How to Add an ESXi Host to Your vSphere Cluster by Using the Quickstart Workflow in the vSphere documentation.
12. Decommission the old host in SDDC Manager that you want to remove from SDDC Manager. For more information, see Decommission Hosts in the VMware Cloud Foundation documentation.
13. Return to the Amazon EVS console.
14. Under the **Hosts** tab, select the failed host and choose **Delete** > **Delete host**.

AWS CLI and SDDC Manager UI

1. Open a new terminal session.
2. Create a new host. See example command below for reference.

```
aws evs create-environment-host \
    --environment-id "env-abcde12345" \
    --host '{ \
        "hostName": "esxi-host-05", \
        "keyName": "your-ec2-keypair-name", \
        "instanceType": "i4i.metal" \
    }'
```

3. Retrieve the credentials for the ESXi root password from AWS Secrets Manager. For more information about retrieving secrets, see Get secrets from AWS Secrets Manager in the *AWS Secrets Manager User Guide*.
4. Go to SDDC Manager.
5. Commission the new host in SDDC Manager, using the ESXi root credentials that you retrieved in a previous step. For more information, see Commission Hosts in the VMware Cloud Foundation documentation.
6. Add the new host to the cluster that contains the impaired host.
7. Decommission the impaired host in SDDC Manager. For more information, see Decommission Hosts in the VMware Cloud Foundation documentation.
8. Return to the terminal.
9. Delete the failed host. See example command below for reference.

```
aws evs delete-environment-host --environment-id "env-abcde12345" --host-name
 "esxi-host-05"
```

Troubleshooting

For troubleshooting guidance, see *Troubleshooting*. If you continue to experience issues after reviewing the troubleshooting guidance, contact AWS Support for further assistance.

Configure a custom route table for Amazon EVS subnets

Amazon EVS supports the use of a custom route table only after the Amazon EVS environment is created. To enable successful environment creation, you must configure the main route table to allow traffic to dependent services such as DNS and on-premises systems. This is because Amazon EVS VLAN subnets are implicitly associated to our VPC's main route table during environment deployment.

After your environment deploys, you must explicitly associate each of the Amazon EVS VLAN subnets with a route table in your VPC. NSX connectivity fails if your VLAN subnets are not explicitly associated with a VPC route table. We strongly recommend that you explicitly associate your subnets with a custom route table. A custom route table provides more granular control over network traffic routing within your VPC, allowing for tailored routing rules for specific subnets or gateways. For more information about creating a custom route table, see Create a route table for your VPC in the *Amazon VPC User Guide*.

Configure a network access control list to control Amazon EVS VLAN subnet traffic

A network access control list (ACL) allows or denies specific inbound or outbound traffic at the subnet level. You can use network ACLs to control inbound and outbound traffic for your Amazon EVS VLAN subnets. For more information, see Create a network ACL for your VPC in the *Amazon VPC User Guide*.

Important

EC2 security groups do not function on elastic network interfaces that are attached to Amazon EVS VLAN subnets. To control traffic to and from Amazon EVS VLAN subnets, you must use a network access control list.

Warning

Amazon EVS requires access to your VCF deployment. You must configure your security groups and network access control lists (ACLs) to allow Amazon EVS to communicate with:

- DNS servers over TCP/UDP port 53.
- Host management VLAN subnet over HTTPS and SSH.
- Management VM VLAN subnet over HTTPS and SSH.

If your security groups and network ACLs do not allow this access, Amazon EVS environment deployment will fail and existing environments may have a degraded compliance status.

Secret management lifecycle

Amazon EVS uses AWS Secrets Manager to create, encrypt, and store secrets in your account on initial environment deployment. These secrets contain the VCF credentials needed to install and access VCF management appliances such as vCenter Server, NSX, and SDDC Manager, as well as the ESXi host root password. Amazon EVS also deletes managed secrets on your behalf when the EVS environment is deleted.

You are responsible for secret lifecyle management, including secret rotation. Amazon EVS does not provide managed rotation of your secrets. We recommend that you rotate secrets regularly on a set rotation window to ensure that secrets are not long-lived. For more information, see Rotation schedules in the *AWS Secrets Manager User Guide*.

Create an Amazon EVS host

After an Amazon EVS environment deploys, you can add hosts to increase capacity and workload resiliency. Amazon EVS supports 4-16 hosts per environment. This action can only be used after the Amazon EVS environment is deployed.

> **Note**
>
> You must assign and commission the host within the SDDC Manager user interface.

To create an Amazon EVS host

Follow these steps to create an Amazon EVS host.

> **Warning**
>
> Amazon EVS hosts use a custom vendor add-on to provide important host functionality. When you add a host to your environment, it will have the latest available version of the Amazon EVS custom add-on. If your environment uses hosts with an older add-on version, adding host to your vSphere cluster will cause cluster image remediation to fail. For steps to troubleshoot this issue, see the section called “Troubleshoot add host failure due to incompatible cluster image”.

Warning

If you have updated your ESXi version after the Amazon EVS environment deployment, SDDC manager may fail during VCF host validation in the commission hosts step. For steps to troubleshoot this issue, see the section called "SDDC Manager fails VCF host validation during host commissioning".

Note

Ensure that your Amazon EVS host count per EVS environment quota is correctly set to ensure successfully host creation. Host creation fails if this quota value is less than the number of hosts that you are attempting to provision within a single Amazon EVS environment. To raise the quota, you can request a quota increase. For more information, see *Service quotas*.

Example

Amazon EVS console and SDDC Managuer UI

1. Go to the Amazon EVS console.
2. In the navigation pane, choose **Environment**.
3. Select the environment where you want to create the host.
4. Select the **Hosts** tab.
5. Choose **Create host**.
6. Specify host details and choose **Create host**.
7. To verify completion, check that the **Host state** has changed to **Created**.
8. Go to SDDC Manager.
9. Commission the new host in SDDC Manager. For more information, see Commission Hosts in the VMware Cloud Foundation documentation.
10. Add the new host to the cluster, using SDDC Manager. For more information, see How to Add an ESXi Host to Your vSphere Cluster by Using the Quickstart Workflow in the vSphere documentation.

AWS CLI and SDDC Manager UI

1. Open a new terminal session.
2. Create a new host. See example command below for reference.

```
aws evs create-environment-host \
    --environment-id "env-abcde12345" \
    --host '{ \
        "hostName": "esxi-host-05", \
        "keyName": "your-ec2-keypair-name", \
        "instanceType": "i4i.metal" \
    }'
```

3. Go to SDDC Manager.
4. Commission the new host in SDDC Manager. For more information, see Commission Hosts in the VMware Cloud Foundation documentation.
5. Add the new host to the cluster, using SDDC Manager. For more information, see How to Add an ESXi Host to Your vSphere Cluster by Using the Quickstart Workflow in the vSphere documentation.

Delete an Amazon EVS host

You can delete an Amazon EVS host from your environment when the host is no longer needed. Amazon EVS requires that your environment have a minimum of four hosts. Amazon EVS does not support environments with fewer than four hosts.

Warning

Deleting a host without decommissioning will leave stale data in your vCenter and SDDC Manager that may require additional efforts to clean up. Ensure that your hosts are decommissioned before deleting hosts in the Amazon EVS console or API.

Warning

Always use the Amazon EVS console or API to remove your Amazon EVS hosts. Deleting hosts from the EC2 console may leave your environment in an inconsistent state.

To delete an Amazon EVS host

Follow these steps to delete an Amazon EVS host.

Example

SDDC Managuer UI and Amazon EVS console

1. Go to SDDC Manager.
2. Remove the cluster from SDDC Manager.
3. Decommission the host in SDDC Manager. For more information, see Decommission Hosts in the VMware Cloud Foundation documentation.
4. Go to the Amazon EVS console.
5. In the navigation pane, choose **Environment**.
6. Select the environment that contains the host to delete.
7. Select the **Hosts** tab.
8. Choose **Delete host**.
9. Select the host and choose **Delete** within the **Hosts** tab. Repeat this step for each host that you want to delete.

SDDC Manager UI and AWS CLI

1. Go to SDDC Manager.
2. Remove the cluster from SDDC Manager.
3. Decommission the host in SDDC Manager. For more information, see Decommission Hosts in the VMware Cloud Foundation documentation.
4. Open a new terminal session.
5. Delete the host. See example command below for reference.

```
aws evs delete-environment-host \
--environment-id env-abcdefghij \
--host-name my-evs-host.example.com
```

Security in Amazon Elastic VMware Service

Cloud security at AWS is the highest priority. As an AWS customer, you benefit from a data center and network architecture that is built to meet the requirements of the most security-sensitive organizations.

Security is a shared responsibility between AWS and you. The shared responsibility model describes this as security of the cloud and security in the cloud:

- **Security of the cloud** – AWS is responsible for protecting the infrastructure that runs AWS services in the AWS Cloud. AWS also provides you with services that you can use securely. Third-party auditors regularly test and verify the effectiveness of our security as part of the AWS Compliance Programs. To learn about the compliance programs that apply to Amazon Elastic VMware Service (Amazon EVS), see AWS services in Scope by Compliance Program.
- **Security in the cloud** – Your responsibility is determined by the AWS service that you use. You are also responsible for other factors including the sensitivity of your data, your company's requirements, and applicable laws and regulations.

This documentation helps you understand how to apply the shared responsibility model when using Amazon EVS. It shows you how to configure Amazon EVS to meet your security and compliance objectives. You also learn how to use other AWS services that help you to monitor and secure your Amazon EVS resources.

Contents

Data protection in Amazon EVS

The AWS shared responsibility model applies to data protection in Amazon Elastic VMware Service. As described in this model, AWS is responsible for protecting the global infrastructure that runs all of the AWS Cloud. You are responsible for maintaining control over your content that is hosted on this infrastructure, including the VMware Cloud Foundation (VCF) components. You are also responsible for the security configuration and management tasks for the AWS services that you

use. For more information about data privacy, see the Data Privacy FAQ. For information about data protection in Europe, see the AWS Shared Responsibility Model and GDPR blog post on the *AWS Security Blog*.

For data protection purposes, we recommend that you protect AWS account credentials and set up individual users with AWS IAM Identity Center or AWS Identity and Access Management. That way, each user is given only the permissions necessary to fulfill their job duties. We also recommend that you secure your data in the following ways:

- Use multi-factor authentication (MFA) with each account.
- Use SSL/TLS to communicate with AWS resources. We require TLS 1.2 and recommend TLS 1.3.
- Set up API and user activity logging with AWS CloudTrail. For information about using CloudTrail trails to capture AWS activities, see Working with CloudTrail trails in the *AWS CloudTrail User Guide*.

> **Note**
>
> Amazon EVS does not log user activity for non-AWS components, such as activity within your VCF environment. These activities are logged in various VMware consoles such as vSphere and NSX Manager. If centralized VCF logging is desired, you can configure VCF monitoring solutions such as VMware Aria Operations or VMware Tanzu Observability to achieve this result. For more information, see VMware Cloud Foundation with VMware Tanzu and VMware Aria Suite Lifecyle in VMware Cloud Foundation mode in the VCF documentation.

- Use AWS encryption solutions, along with all default security controls within AWS services.
- Use advanced managed security services such as Amazon Macie, which assists in discovering and securing sensitive data that is stored in Amazon S3.
- If you require FIPS 140-3 validated cryptographic modules when accessing AWS through a command line interface or an API, use a FIPS endpoint. For more information about the available FIPS endpoints, see Federal Information Processing Standard (FIPS) 140-3.

We strongly recommend that you never put sensitive identifying information, such as your customers' email addresses, into tags or free-form text fields such as a **Name** field. This includes when you work with Amazon EVS or other AWS services using the console, API, AWS CLI, or AWS SDKs. Any data that you enter into tags or free-form text fields used for names may be used for

billing or diagnostic logs. If you provide a URL to an external server, we strongly recommend that you do not include credentials information in the URL to validate your request to that server.

Encryption at rest

Amazon EVS deploys i4i.metal EC2 instances that use transparent AES-256 encryption by default for data stored on the instance store volume. Amazon EVS does not support EBS boot volume encryption at this time.

Amazon EBS boot volume

Amazon EVS i4i.metal instances use an Amazon EBS boot volume. The boot volume contains the operating system and other necessary files for the EC2 instance to boot and run. The boot volume is not encrypted. Amazon EVS does not support boot volume encryption at this time. The boot volume does not contain user data from your virtual machines.

Instance store volume

Amazon EVS i4i.metal EC2 instances come with local NVMe SSD storage, which is part of the instance's hardware. Amazon EVS uses NVMe instance store volumes as the disks for vSAN datastores. The vSAN datastore holds your management and workload virtual machines after you deploy your Amazon EVS environment.

The data on NVMe instance store volumes is encrypted using an XTS-AES-256 cipher, implemented on a hardware module on the instance. The keys that are used to encrypt data that's written to locally-attached NVMe storage devices are per-customer, and per volume. For more information, see Encryption at rest in the *Amazon EC2 User Guide*.

After you deploy the Amazon EVS environment, you can enable vSAN data-at-rest encryption for all data stored in the vSAN datastore, for individual virtual machines (VMs), or for individual files within VMs. This granular control can be useful when some VMs require encryption while others do not, or when specific disks or files within a VM need to be encrypted. For more information, see How vSAN Data-At-Rest Encryption Works in the VMware vSAN documentation.

Encryption in transit

Amazon EVS does not encrypt your in-transit traffic by default. To encrypt the data in transit that traverses Amazon EVS, you can use application layer encryption with a protocol like Transport

Layer Security (TLS). To learn about EC2 instance traffic encryption, see Encryption in Transit in the *Amazon EC2 User Guide*.

> **Note**
>
> Nitro network encryption does not apply for the EC2 instances that Amazon EVS deploys. Amazon EVS does not support in-transit encryption of inter-host traffic.

In-transit encryption options for on-premises connectivity

To encrypt traffic between your on-premises data center and Amazon EVS, you can combine use of AWS Direct Connect and AWS Site-To-Site VPN with AWS Transit Gateway. This combination provides an IPsec-encrypted private connection that also reduces network costs, increases bandwidth throughput, and provides a more consistent network experience than internet-based VPN connections. For more information, see Private IP AWS Site-to-Site VPN with AWS Direct Connect.

> **Note**
>
> Amazon EVS does not support connectivity via an AWS Direct Connect private virtual interface (VIF), or via an AWS Site-to-Site VPN connection that terminates directly into the underlay VPC. Amazon EVS does support IPSec VPN termination on the NSX Edge Tier-0 or Tier-1 gateway. For more information, see Add an NSX IPSec VPN Service in the VMware NSX documentation.

MAC Security (MACsec) is an IEEE standard that provides data confidentiality, data integrity, and data origin authenticity. You can use AWS Direct Connect connections that support MACsec to encrypt your data from your corporate data center to the AWS Direct Connect location. For more information, see MAC Security in AWS Direct Connect in the *AWS Direct Connect User Guide*.

Encryption in transit for VMware network data

After the Amazon EVS environment deploys, you have multiple options to enforce data in transit encryption at the VMware VCF layer:

- VMware vDefend Distributed Firewall - Allows you to implement fine-grained network segmentation and enforce TLS/SSL encryption between virtual machines. For more information,

see Configure Security Settings for Distributed Firewall by Using the User Interface in the VMware VCF documentation.

- vSAN data-in-transit encryption - Can be used to encrypt all data and metadata between hosts in your vSAN cluster. For more information, see vSAN Data-In-Transit Encryption in the VMware vSAN documentation.
- Encrypted vSphere vMotion - secures confidentiality, integrity, and authenticity of data that is transferred with vSphere vMotion. For more information, see What is Encrypted vSphere vMotion in the vSphere documentation.

Key and secret management

During Amazon EVS environment deployment, Amazon EVS uses AWS Secrets Manager to create, encrypt, and store secrets that contain the VCF credentials needed to install and access VMware VCF management appliances, as well as the ESXi root password. Amazon EVS also deletes managed secrets on your behalf when the EVS environment is deleted. For more information, see What's in a Secrets Manager secret in the *AWS Secrets Manager User Guide*.

Secrets Manager uses envelope encryption with AWS KMS keys and data keys to protect each secret value. The default AWS managed key for Secrets Manager is used unless otherwise specified. Alternatively, you can specify a customer managed key during environment creation to encrypt your secrets. For more information, see Secret encryption and decryption in AWS Secrets Manager in the *AWS Secrets Manager User Guide*.

> **Note**
>
> There are additional usage charges for customer managed keys. The default AWS managed key is provided at no cost. For more information, see Pricing in the *AWS Secrets Manager User Guide*.

Amazon EVS does not synchronize credentials between AWS Secrets Manager and your VCF software post-deployment. You are responsible for ensuring that the secrets associated with your Amazon EVS environment are kept in sync with the credentials in SDDC Manager to avoid VCF password expiration and loss of access to VCF software.

Amazon EVS does not rotate secrets on your behalf. You are responsible for rotating the secrets associated with your environment. We strongly recommend that rotate your secrets as soon

as the environment is created, and implement a rotation schedule to update your secrets on a regular interval. For more information about rotating AWS Secrets Manager secrets, see Rotation by Lambda function in the *AWS Secrets Manager User Guide*. For more information about VCF password management, see Password Management in the VMware Cloud Foundation documentation.

Important

Amazon EVS does not synchronize credentials between AWS Secrets Manager and your VCF software post-deployment. If using AWS Secrets Manager post-deployment, you must keep credentials between AWS Secrets Manager and SDDC Manager in sync to avoid VCF password expiration issues. You may lose access to VCF software if SDDC Manager credentials are not kept up to date.

Note

Amazon EVS does not provide managed rotation of secrets.

Note

There are costs to using a Lambda function for AWS Secrets Manager secret rotation. For more information, see Pricing in the *AWS Secrets Manager User Guide*.

Internetwork traffic privacy

Amazon EVS uses a customer-provided VPC to create boundaries between resources in the Amazon EVS environment and control traffic between them, your on-premises network, and the internet. For more information about Amazon VPC security, see Ensure internetwork traffic privacy in Amazon VPC in the *Amazon VPC User Guide*.

By default, Amazon EVS creates private VLAN subnets during environment creation that deny direct internet access. To add another layer of security to your VPC, you can create a custom network access control list for your VPC with rules that further restrict internet connectivity. For more information, see Create a network ACL for your VPC in the *Amazon VPC User Guide*.

Important

EC2 security groups do not function on elastic network interfaces that are attached to Amazon EVS VLAN subnets. To control traffic to and from Amazon EVS VLAN subnets, you must use a network access control list.

If you are an NSX administrator, you can configure the following NSX features to secure network traffic:

- VMware vDefend Gateway Firewall - Secures the network perimeter, protecting against external threats (north-south traffic). For more information, see Add a Gateway Firewall Policy and Rule in the VMware NSX documentation.
- VMware vDefend Distributed Firewall - Protects against attacks originating from within an internal network (east-west traffic). For more information, see Add a Distributed Firewall in the VMware NSX documentation.

Identity and access management for Amazon Elastic VMware Service

AWS Identity and Access Management (IAM) is an AWS service that helps an administrator securely control access to AWS resources. IAM administrators control who can be *authenticated* (signed in) and *authorized* (have permissions) to use Amazon Elastic VMware Service (Amazon EVS) resources. IAM is an AWS service that you can use with no additional charge.

Topics

Audience

How you use AWS Identity and Access Management (IAM) differs, depending on the work you do in Amazon EVS.

Service user – If you use the Amazon EVS service to do your job, then your administrator provides you with the credentials and permissions that you need. As you use more Amazon EVS features to do your work, you might need additional permissions. Understanding how access is managed can help you request the right permissions from your administrator.

If you cannot access a feature in Amazon EVS, see Troubleshooting Amazon EVS identity and access.

Service administrator - If you're in charge of Amazon EVS resources at your company, you probably have full access to Amazon EVS. It's your job to determine which Amazon EVS features and resources your service users should access. You must then submit requests to your IAM administrator to change the permissions of your service users. Review the information on this page to understand the basic concepts of IAM. To learn more about how your company can use IAM with Amazon EVS, see the section called "How Amazon EVS works with IAM".

IAM administrator - If you're an IAM administrator, you might want to learn details about how you can write policies to manage access to Amazon EVS. To view example Amazon EVS identity-based policies that you can use in IAM, see Amazon EVS identity-based policy examples.

Authenticating with identities

Authentication is how you sign in to AWS using your identity credentials. You must be *authenticated* (signed in to AWS) as the AWS account root user, an IAM user, or by assuming an IAM role.

You can sign in to AWS as a federated identity by using credentials provided through an identity source. AWS IAM Identity Center (IAM Identity Center) users, your company's single sign-on authentication, and your Google or Facebook credentials are examples of federated identities. When you sign in as a federated identity, your administrator previously set up identity federation using IAM roles. When you access AWS by using federation, you are indirectly assuming a role.

Depending on the type of user you are, you can sign in to the AWS Management Console or the AWS access portal. For more information about signing in to AWS, see How to sign in to your AWS account in the *AWS Sign-In User Guide*.

If you access AWS programmatically, AWS provides a software development kit (SDK) and a command line interface (CLI) to cryptographically sign your requests using your credentials. If you don't use AWS tools, you must sign requests yourself. For more information about using the recommended method to sign requests yourself, see Signature Version 4 signing process in the *AWS General Reference*.

Regardless of the authentication method that you use, you might also be required to provide additional security information. For example, AWS recommends that you use multi-factor authentication (MFA) to increase the security of your account. To learn more, see Multi-factor authentication in the *AWS IAM Identity Center (successor to AWS Single Sign-On) User Guide* and Using multi-factor authentication (MFA) in AWS in the *IAM User Guide*.

AWS account root user

When you first create an AWS account, you begin with a single sign-in identity that has complete access to all AWS services and resources in the account. This identity is called the AWS account root user and is accessed by signing in with the email address and password that you used to create the account. We strongly recommend that you don't use the root user for your everyday tasks. Safeguard your root user credentials and use them to perform tasks that only the root user can perform. For the complete list of tasks that require you to sign in as the root user, see Tasks that require root user credentials in the *Account Management Reference Guide*.

Federated identity

As a best practice, require human users, including users that require administrator access, to use federation with an identity provider to access AWS services by using temporary credentials.

A federated identity is a user from your enterprise user directory, a web identity provider, the AWS Directory Service, the Identity Center directory, or any user that accesses AWS services by using credentials provided through an identity source. When federated identities access AWS accounts, they assume roles, and the roles provide temporary credentials.

For centralized access management, we recommend that you use AWS IAM Identity Center. You can create users and groups in IAM Identity Center, or you can connect and synchronize to a set of users and groups in your own identity source for use across all your AWS accounts and applications. For information about IAM Identity Center, see What is IAM Identity Center? in the *AWS IAM Identity Center (successor to AWS Single Sign-On) User Guide*.

IAM users and groups

An *IAM user* is an identity within your AWS account that has specific permissions for a single person or application. Where possible, we recommend relying on temporary credentials instead of creating IAM users who have long-term credentials such as passwords and access keys. However, if you have specific use cases that require long-term credentials with IAM users, we recommend that you rotate access keys. For more information, see Rotate access keys regularly for use cases that require long-term credentials in the *IAM User Guide*.

An IAM group is an identity that specifies a collection of IAM users. You can't sign in as a group. You can use groups to specify permissions for multiple users at a time. Groups make permissions easier to manage for large sets of users. For example, you could have a group named *IAMAdmins* and give that group permissions to administer IAM resources.

Users are different from roles. A user is uniquely associated with one person or application, but a role is intended to be assumable by anyone who needs it. Users have permanent long-term credentials, but roles provide temporary credentials. To learn more, see When to create an IAM user (instead of a role) in the *IAM User Guide*.

IAM roles

An *IAM role* is an identity within your AWS account that has specific permissions. It is similar to an IAM user, but is not associated with a specific person. You can temporarily assume an IAM role in the AWS Management Console by switching roles. You can assume a role by calling an AWS CLI or AWS API operation or by using a custom URL. For more information about methods for using roles, see Using IAM roles in the *IAM User Guide*.

IAM roles with temporary credentials are useful in the following situations:

- **Federated user access** – To assign permissions to a federated identity, you create a role and define permissions for the role. When a federated identity authenticates, the identity is associated with the role and is granted the permissions that are defined by the role. For information about roles for federation, see Creating a role for a third-party Identity Provider in the *IAM User Guide*. If you use IAM Identity Center, you configure a permission set. To control what your identities can access after they authenticate, IAM Identity Center correlates the permission set to a role in IAM. For information about permissions sets, see Permission sets in the *AWS IAM Identity Center (successor to AWS Single Sign-On) User Guide*.
- **Temporary IAM user permissions** – An IAM user can assume an IAM role to temporarily take on different permissions for a specific task.

- **Cross-account access** – You can use an IAM role to allow someone (a trusted principal) in a different account to access resources in your account. Roles are the primary way to grant cross-account access. However, with some AWS services, you can attach a policy directly to a resource (instead of using a role as a proxy). To learn the difference between roles and resource-based policies for cross-account access, see How IAM roles differ from resource-based policies in the *IAM User Guide*.
- **Cross-service access** – Some AWS services use features in other AWS services. For example, when you make a call in a service, it's common for that service to run applications in Amazon EC2 or store objects in Amazon S3. A service might do this using the calling principal's permissions, using a service role, or using a service-linked role.
  - **Principal permissions** – When you use an IAM user or role to perform actions in AWS, you are considered a principal. Policies grant permissions to a principal. When you use some services, you might perform an action that then triggers another action in a different service. In this case, you must have permissions to perform both actions.
  - **Service role** – A service role is an IAM role that a service assumes to perform actions on your behalf. An IAM administrator can create, modify, and delete a service role from within IAM. For more information, see Creating a role to delegate permissions to an AWS service in the *IAM User Guide*.
  - **Service-linked role** – A service-linked role is a type of service role that is linked to an AWS service. The service can assume the role to perform an action on your behalf. Service-linked roles appear in your AWS account and are owned by the service. An IAM administrator can view, but not edit the permissions for service-linked roles.
- **Applications running on Amazon EC2** – You can use an IAM role to manage temporary credentials for applications that are running on an Amazon EC2 instance and making AWS CLI or AWS API requests. This is preferable to storing access keys within the Amazon EC2 instance. To assign an AWS role to an Amazon EC2 instance and make it available to all of its applications, you create an instance profile that is attached to the instance. An instance profile contains the role and enables programs that are running on the Amazon EC2 instance to get temporary credentials. For more information, see Using an IAM role to grant permissions to applications running on Amazon EC2 instances in the *IAM User Guide*.

To learn whether to use IAM roles, see When to create an IAM role (instead of a user) in the *IAM User Guide*.

Managing access using policies

You control access in AWS by creating policies and attaching them to AWS identities or resources. A policy is an object in AWS that, when associated with an identity or resource, defines their permissions. AWS evaluates these policies when a principal (user, root user, or role session) makes a request. Permissions in the policies determine whether the request is allowed or denied. Most policies are stored in AWS as JSON documents. For more information about the structure and contents of JSON policy documents, see Overview of JSON policies in the *IAM User Guide*.

Administrators can use AWS JSON policies to specify who has access to what. That is, which **principal** can perform **actions** on what **resources**, and under what **conditions**.

Every IAM entity (user or role) starts with no permissions. By default, users can do nothing, not even change their own password. To give a user permission to do something, an administrator must attach a permissions policy to a user. Or the administrator can add the user to a group that has the intended permissions. When an administrator gives permissions to a group, all users in that group are granted those permissions.

IAM policies define permissions for an action regardless of the method that you use to perform the operation. For example, suppose that you have a policy that allows the `iam:GetRole` action. A user with that policy can get role information from the AWS Management Console, the AWS CLI, or the AWS API.

Identity-based policies

Identity-based policies are JSON permissions policy documents that you can attach to an identity, such as an IAM user, role, or group. These policies control what actions users and roles can perform, on which resources, and under what conditions. To learn how to create an identity-based policy, see Creating IAM policies in the *IAM User Guide*.

Identity-based policies can be further categorized as *inline policies* or *managed policies*. Inline policies are embedded directly into a single user, group, or role. Managed policies are standalone policies that you can attach to multiple users, groups, and roles in your AWS account. Managed policies include AWS managed policies and customer managed policies. To learn how to choose between a managed policy or an inline policy, see Choosing between managed policies and inline policies in the *IAM User Guide*.

Resource-based policies

Resource-based policies are JSON policy documents that you attach to a resource such as an Amazon S3 bucket. Service administrators can use these policies to define what actions a specified principal (account member, user, or role) can perform on that resource and under what conditions. Resource-based policies are inline policies. There are no managed resource-based policies.

Access control lists (ACLs)

Access control lists (ACLs) are a type of policy that controls which principals (account members, users, or roles) have permissions to access a resource. ACLs are similar to resource-based policies, although they do not use the JSON policy document format. Amazon S3, AWS WAF, and Amazon VPC are examples of services that support ACLs. To learn more about ACLs, see Access Control List (ACL) overview in the *Amazon Simple Storage Service Developer Guide*.

Other policy types

AWS supports additional, less-common policy types. These policy types can set the maximum permissions granted to you by the more common policy types.

- **Permissions boundaries** – A permissions boundary is an advanced feature in which you set the maximum permissions that an identity-based policy can grant to an IAM entity (IAM user or role). You can set a permissions boundary for an entity. The resulting permissions are the intersection of entity's identity-based policies and its permissions boundaries. Resource-based policies that specify the user or role in the `Principal` field are not limited by the permissions boundary. An explicit deny in any of these policies overrides the allow. For more information about permissions boundaries, see Permissions boundaries for IAM entities in the *IAM User Guide*.
- **Service control policies (SCPs)** – SCPs are JSON policies that specify the maximum permissions for an organization or organizational unit (OU) in AWS Organizations. AWS Organizations is a service for grouping and centrally managing multiple AWS accounts that your business owns. If you enable all features in an organization, then you can apply service control policies (SCPs) to any or all of your accounts. The SCP limits permissions for entities in member accounts, including each AWS account root user. For more information about Organizations and SCPs, see How SCPs work in the *AWS Organizations User Guide*.
- **Session policies** – Session policies are advanced policies that you pass as a parameter when you programmatically create a temporary session for a role or federated user. The resulting session's permissions are the intersection of the user or role's identity-based policies and the session

policies. Permissions can also come from a resource-based policy. An explicit deny in any of these policies overrides the allow. For more information, see Session policies in the *IAM User Guide*.

Multiple policy types

When multiple types of policies apply to a request, the resulting permissions are more complicated to understand. To learn how AWS determines whether to allow a request when multiple policy types are involved, see Policy evaluation logic in the *IAM User Guide*.

How Amazon EVS works with IAM

Before you use IAM to manage access to Amazon EVS, learn what IAM features are available to use with Amazon EVS.

IAM feature	Amazon EVS support
the section called “Identity-based policies for Amazon EVS”	Yes
the section called “Resource-based policies within Amazon EVS”	No
the section called “Policy actions for Amazon EVS”	Yes
the section called “Policy resources for Amazon EVS”	Partial
the section called “Policy condition keys for Amazon EVS”	Yes
the section called “Access control lists (ACLs) in Amazon EVS”	No
the section called “Attribute-based access control (ABAC) with Amazon EVS”	Yes
the section called “Using temporary credentials with Amazon EVS”	Yes

IAM feature	Amazon EVS support
the section called “Forward access sessions for Amazon EVS”	Yes
the section called “Service roles for Amazon EVS”	No
the section called “Service-linked roles for Amazon EVS”	Yes

To get a high-level view of how Amazon EVS and other AWS services work with IAM, see AWS services that work with IAM in the *IAM User Guide*.

Topics

- Identity-based policies for Amazon EVS
- Access control lists (ACLs) in Amazon EVS
- Attribute-based access control (ABAC) with Amazon EVS
- Using temporary credentials with Amazon EVS
- Forward access sessions for Amazon EVS
- Service roles for Amazon EVS
- Service-linked roles for Amazon EVS

Identity-based policies for Amazon EVS

Supports identity-based policies: Yes

Identity-based policies are JSON permissions policy documents that you can attach to an identity, such as an IAM user, group of users, or role. These policies control what actions users and roles can perform, on which resources, and under what conditions. To learn how to create an identity-based policy, see Define custom IAM permissions with customer managed policies in the *IAM User Guide*.

With IAM identity-based policies, you can specify allowed or denied actions and resources as well as the conditions under which actions are allowed or denied. You can’t specify the principal in an identity-based policy because it applies to the user or role to which it is attached. To learn about all

of the elements that you use in a JSON policy, see IAM JSON policy elements reference in the *IAM User Guide*.

Identity-based policy examples for Amazon EVS

To view examples of Amazon EVS identity-based policies, see Amazon EVS identity-based policy examples.

Resource-based policies within Amazon EVS

Supports resource-based policies: No

Resource-based policies are JSON policy documents that you attach to a resource. Examples of resource-based policies are IAM role trust policies and Amazon S3 bucket policies. In services that support resource-based policies, service administrators can use them to control access to a specific resource. For the resource where the policy is attached, the policy defines what actions a specified principal can perform on that resource and under what conditions. You must specify a principal in a resource-based policy. Principals can include accounts, users, roles, federated users, or AWS services.

To enable cross-account access, you can specify an entire account or IAM entities in another account as the principal in a resource-based policy. Adding a cross-account principal to a resource-based policy is only half of establishing the trust relationship. When the principal and the resource are in different AWS accounts, an IAM administrator in the trusted account must also grant the principal entity (user or role) permission to access the resource. They grant permission by attaching an identity-based policy to the entity. However, if a resource-based policy grants access to a principal in the same account, no additional identity-based policy is required. For more information, see Cross account resource access in IAM in the IAM User Guide.

Policy actions for Amazon EVS

Supports actions Yes

Administrators can use AWS JSON policies to specify who has access to what. That is, which **principal** can perform **actions** on what **resources**, and under what **conditions**.

The `Action` element of an IAM identity-based policy describes the specific action or actions that will be allowed or denied by the policy. Policy actions usually have the same name as the associated AWS API operation. The action is used in a policy to grant permissions to perform the associated operation.

Policy actions in Amazon EVS use the following prefix before the action: `evs:`. For example, to grant someone permission to create an environment with the Amazon EVS `CreateEnvironment` API operation, you include the `evs:CreateEnvironment` action in their policy. Policy statements must include either an `Action` or `NotAction` element. Amazon EVS defines its own set of actions that describe tasks that you can perform with this service.

To specify multiple actions in a single statement, separate them with commas as follows:

```
"Action": [
      "evs:action1",
      "evs:action2"
```

You can specify multiple actions using wildcards (*). For example, to specify all actions that begin with the word `List`, include the following action:

```
"Action": "evs:List*"
```

To see a list of Amazon EVS actions, see Actions Defined by Amazon EVS in the *Service Authorization Reference*.

Policy resources for Amazon EVS

Supports policy resources: Partial

Administrators can use AWS JSON policies to specify who has access to what. That is, which **principal** can perform **actions** on what **resources**, and under what **conditions**.

The `Resource` JSON policy element specifies the object or objects to which the action applies. Statements must include either a `Resource` or a `NotResource` element. As a best practice, specify a resource using its Amazon Resource Name (ARN). You can do this for actions that support a specific resource type, known as *resource-level permissions*.

For actions that don't support resource-level permissions, such as listing operations, use a wildcard (*) to indicate that the statement applies to all resources.

```
"Resource": "*"
```

To see a list of Amazon EVS resource types and their ARNs, see Resources defined by Amazon Elastic VMware Service in the *Service Authorization Reference*. To learn with which actions you can specify the ARN of each resource, see Actions defined by Amazon Elastic VMware Service.

Some Amazon EVS API actions support multiple resources. For example, multiple environments can be referenced when calling the `ListEnvironments` API action. To specify multiple resources in a single statement, separate the ARNs with commas.

```
"Resource": [
      "EXAMPLE-RESOURCE-1",
      "EXAMPLE-RESOURCE-2"
```

For example, the Amazon EVS environment resource has the following ARN:

```
arn:${Partition}:evs:${Region}:${Account}:environment/${EnvironmentId}
```

To specify the environments `my-environment-1` and `my-environment-2` in your statement, use the following example ARNs:

```
"Resource": [
        "arn:aws:evs:us-east-1:123456789012:environment/my-environment-1",
        "arn:aws:evs:us-east-1:123456789012:environment/my-environment-2"
```

To specify all environments that belong to a specific account, use the wildcard (*):

```
"Resource": "arn:aws:evs:us-east-1:123456789012:environment/*"
```

Policy condition keys for Amazon EVS

Supports service-specific policy condition keys: Yes

Administrators can use AWS JSON policies to specify who has access to what. That is, which **principal** can perform **actions** on what **resources**, and under what **conditions**.

The `Condition` element (or `Condition` block) lets you specify conditions in which a statement is in effect. The `Condition` element is optional. You can create conditional expressions that use condition operators, such as equals or less than, to match the condition in the policy with values in the request.

If you specify multiple `Condition` elements in a statement, or multiple keys in a single `Condition` element, AWS evaluates them using a logical `AND` operation. If you specify multiple values for a single condition key, AWS evaluates the condition using a logical `OR` operation. All of the conditions must be met before the statement's permissions are granted.

You can also use placeholder variables when you specify conditions. For example, you can grant an IAM user permission to access a resource only if it is tagged with their IAM user name. For more information, see IAM policy elements: variables and tags in the *IAM User Guide*.

Amazon EVS defines its own set of condition keys and also supports using some global condition keys. To see all AWS global condition keys, see AWS global condition context keys in the *IAM User Guide*.

All Amazon EC2 actions support the `aws:RequestedRegion` and `ec2:Region` condition keys. For more information, see Example: Restricting access to a specific region.

To see a list of Amazon EVS condition keys, see Condition Keys for Amazon EVS in the *Service Authorization Reference*. To learn with which actions and resources you can use a condition key, see Actions defined by Amazon EVS.

Access control lists (ACLs) in Amazon EVS

Supports ACLs: No

Access control lists (ACLs) control which principals (account members, users, or roles) have permissions to access a resource. ACLs are similar to resource-based policies, although they do not use the JSON policy document format.

Attribute-based access control (ABAC) with Amazon EVS

Supports ABAC (tags in policies): Yes

Attribute-based access control (ABAC) is an authorization strategy that defines permissions based on attributes. In AWS, these attributes are called tags. You can attach tags to IAM entities (users or roles) and to many AWS resources. Tagging entities and resources is the first step of ABAC. Then you design ABAC policies to allow operations when the principal's tag matches the tag on the resource that they are trying to access.

ABAC is helpful in environments that are growing rapidly and helps with situations where policy management becomes cumbersome.

You can attach tags to Amazon EVS resources or pass tags in a request to Amazon EVS. To control access based on tags, you provide tag information in the condition element of a policy using the `aws:ResourceTag/<key-name>`, `aws:RequestTag/<key-name>`, or `aws:TagKeys` condition keys. For more information about which actions that you can use tags in condition keys with, see Actions defined by Amazon EVS in the *Service Authorization Reference*.

Using temporary credentials with Amazon EVS

Supports temporary credentials: Yes

Some AWS services don't work when you sign in using temporary credentials. For additional information, including which AWS services work with temporary credentials, see AWS services that work with IAM in the *IAM User Guide*.

You are using temporary credentials if you sign in to the AWS Management Console using any method except a user name and password. For example, when you access AWS using your company's single sign-on (SSO) link, that process automatically creates temporary credentials. You also automatically create temporary credentials when you sign in to the console as a user and then switch roles. For more information about switching roles, see Switch from a user to an IAM role (console) in the *IAM User Guide*.

You can manually create temporary credentials using the AWS CLI or AWS API. You can then use those temporary credentials to access AWS. AWS recommends that you dynamically generate temporary credentials instead of using long-term access keys. For more information, see Temporary security credentials in IAM.

Forward access sessions for Amazon EVS

Supports forward access sessions (FAS): Yes

When you use an IAM user or role to perform actions in AWS, you are considered a principal. When you use some services, you might perform an action that then initiates another action in a different service. FAS uses the permissions of the principal calling an AWS service, combined with the requesting AWS service to make requests to downstream services. FAS requests are only made when a service receives a request that requires interactions with other AWS services or resources to complete. In this case, you must have permissions to perform both actions. For policy details when making FAS requests, see Forward access sessions.

Service roles for Amazon EVS

Supports service roles: No

A service role is an IAM role that a service assumes to perform actions on your behalf. An IAM administrator can create, modify, and delete a service role from within IAM. For more information, see Create a role to delegate permissions to an AWS service in the *IAM User Guide*.

Service-linked roles for Amazon EVS

Supports service-linked roles: Yes

A service-linked role is a type of service role that is linked to an AWS service. The service can assume the role to perform an action on your behalf. Service-linked roles appear in your AWS account and are owned by the service. An IAM administrator can view, but not edit the permissions for service-linked roles.

For details about creating or managing Amazon EVS service-linked roles, see the section called "Using service-linked roles".

Amazon EVS identity-based policy examples

By default, IAM users and roles don't have permission to create or modify Amazon EVS resources. They also can't perform tasks using the AWS Management Console, AWS CLI, or AWS API. An IAM administrator must create IAM policies that grant users and roles permission to perform specific API operations on the specified resources they need. The administrator must then attach those policies to the IAM users or groups that require those permissions.

To learn how to create an IAM identity-based policy using these example JSON policy documents, see Creating policies using the JSON editor in the *IAM User Guide*.

Topics

- Policy best practices
- Using the Amazon EVS console
- Allow users to view their own permissions
- Create and manage an Amazon EVS environment
- Get and list Amazon EVS environments, hosts, and VLANs

Policy best practices

Identity-based policies determine whether someone can create, access, or delete Amazon EVS resources in your account. These actions can incur costs for your AWS account. When you create or edit identity-based policies, follow these guidelines and recommendations:

- **Get started with AWS managed policies and move toward least-privilege permissions** – To get started granting permissions to your users and workloads, use the AWS managed policies

that grant permissions for many common use cases. They are available in your AWS account. We recommend that you reduce permissions further by defining AWS customer managed policies that are specific to your use cases. For more information, see AWS managed policies or AWS managed policies for job functions in the *IAM User Guide*.

- **Apply least-privilege permissions** – When you set permissions with IAM policies, grant only the permissions required to perform a task. You do this by defining the actions that can be taken on specific resources under specific conditions, also known as *least-privilege permissions*. For more information about using IAM to apply permissions, see Policies and permissions in IAM in the *IAM User Guide*.
- **Use conditions in IAM policies to further restrict access** – You can add a condition to your policies to limit access to actions and resources. For example, you can write a policy condition to specify that all requests must be sent using SSL. You can also use conditions to grant access to service actions if they are used through a specific AWS service, such as AWS CloudFormation. For more information, see IAM JSON policy elements: condition in the *IAM User Guide*.
- **Use IAM Access Analyzer to validate your IAM policies to ensure secure and functional permissions** – IAM Access Analyzer validates new and existing policies so that the policies adhere to the IAM policy language (JSON) and IAM best practices. IAM Access Analyzer provides more than 100 policy checks and actionable recommendations to help you author secure and functional policies. For more information, see IAM Access Analyzer policy validation in the *IAM User Guide*.
- **Require multi-factor authentication (MFA)** – If you have a scenario that requires IAM users or root users in your account, turn on MFA for additional security. To require MFA when API operations are called, add MFA conditions to your policies. For more information, see Configuring MFA-protected API access in the *IAM User Guide*.

Using the Amazon EVS console

To access the Amazon EVS console, an IAM principal must have a minimum set of permissions. These permissions must allow the principal to list and view details about the Amazon EVS resources in your AWS account. If you create an identity-based policy that is more restrictive than the minimum required permissions, the console won't function as intended for principals with that policy attached to them.

To ensure that your IAM principals can still use the Amazon EVS console, create a policy with your own unique name, such as `AmazonEVSAdminPolicy`. Attach the policy to the principals. For more information, see Adding permissions to a user in the *IAM User Guide*:

```
{
    "Version": "2012-10-17"&TCX5-2025-waiver;,
    "Statement": [
        {
            "Effect": "Allow",
            "Action": [
                "evs:*"
            ],
            "Resource": "*"
        },
        {
            "Sid": "EVSServiceLinkedRole",
            "Effect": "Allow",
            "Action": [
                "iam:CreateServiceLinkedRole"
            ],
            "Resource": "arn:aws:iam::*:role/aws-service-role/evs.amazonaws.com/
AWSServiceRoleForEVS",
            "Condition": {
                "StringLike": {
                    "iam:AWSServiceName": "evs.amazonaws.com"
                }
            }
        }
    ]
}
```

You don’t need to allow minimum console permissions for users that are making calls only to the AWS CLI or the AWS API. Instead, allow access to only the actions that match the API operation that you’re trying to perform.

Allow users to view their own permissions

This example shows how you might create a policy that allows IAM users to view the inline and managed policies that are attached to their user identity. This policy includes permissions to complete this action on the console or programmatically using the AWS CLI or AWS API.

```
{
    "Version": "2012-10-17"&TCX5-2025-waiver;,
    "Statement": [
        {
            "Sid": "ViewOwnUserInfo",
```

```
            "Effect": "Allow",
            "Action": [
                "iam:GetUserPolicy",
                "iam:ListGroupsForUser",
                "iam:ListAttachedUserPolicies",
                "iam:ListUserPolicies",
                "iam:GetUser"
            ],
            "Resource": ["arn:aws:iam::*:user/${aws:username}"]
        },
        {
            "Sid": "NavigateInConsole",
            "Effect": "Allow",
            "Action": [
                "iam:GetGroupPolicy",
                "iam:GetPolicyVersion",
                "iam:GetPolicy",
                "iam:ListAttachedGroupPolicies",
                "iam:ListGroupPolicies",
                "iam:ListPolicyVersions",
                "iam:ListPolicies",
                "iam:ListUsers"
            ],
            "Resource": "*"
        }
    ]
}
```

Create and manage an Amazon EVS environment

This example policy includes the permissions required to create and delete an Amazon EVS environment, and add or delete hosts after the environment has been created.

You can replace the AWS Region with the AWS Region that you want to create an environment in. If your account already has the `AWSServiceRoleForAmazonEVS` role, you can remove the `iam:CreateServiceLinkedRole` action from the policy. If you've ever created an Amazon EVS environment in your account, a role with these permissions already exists, unless you deleted it.

```
{
    "Version": "2012-10-17"&TCX5-2025-waiver;,
    "Statement": [
        {
            "Sid": "ReadOnlyDescribeActions",
```

```
            "Effect": "Allow",
            "Action": [
                "ec2:DescribeVpcs",
                "ec2:DescribeInstanceStatus",
                "ec2:DescribeHosts",
                "ec2:DescribeDhcpOptions",
                "ec2:DescribeAddresses",
                "ec2:DescribeKeyPairs",
                "ec2:DescribeSubnets",
                "ec2:DescribeNetworkInterfaces",
                "ec2:DescribeInstances",
                "ec2:DescribeRouteServers",
                "ec2:DescribeRouteServerEndpoints",
                "ec2:DescribeRouteServerPeers",
                "ec2:DescribePlacementGroups",
                "ec2:DescribeVolumes",
                "ec2:DescribeSecurityGroups",
                "support:DescribeServices",
                "support:DescribeSupportLevel",
                "servicequotas:GetServiceQuota",
                "servicequotas:ListServiceQuotas"
            ],
            "Resource": "*"
        },
        {
            "Sid": "ModifyNetworkInterfaceStatement",
            "Effect": "Allow",
            "Action": [
                "ec2:ModifyNetworkInterfaceAttribute",
                "ec2:DeleteNetworkInterface"
            ],
            "Resource": "arn:aws:ec2:*:*:network-interface/*",
            "Condition": {
                "Null": {
                    "aws:ResourceTag/AmazonEVSManaged": "false"
                }
            }
        },
        {
            "Sid": "ModifyNetworkInterfaceStatementForSubnetAssociation",
            "Effect": "Allow",
            "Action": [
                "ec2:ModifyNetworkInterfaceAttribute"
            ],
```

```
            "Resource": "arn:aws:ec2:*:*:subnet/*",
            "Condition": {
                "Null": {
                    "aws:ResourceTag/AmazonEVSManaged": "false"
                }
            }
        },
        {
            "Sid": "CreateNetworkInterfaceWithTag",
            "Effect": "Allow",
            "Action": [
                "ec2:CreateNetworkInterface"
            ],
            "Resource": [
                "arn:aws:ec2:*:*:network-interface/*"
            ],
            "Condition": {
                "Null": {
                    "aws:RequestTag/AmazonEVSManaged": "false"
                }
            }
        },
        {
            "Sid": "CreateNetworkInterfaceAdditionalResources",
            "Effect": "Allow",
            "Action": [
                "ec2:CreateNetworkInterface"
            ],
            "Resource": [
                "arn:aws:ec2:*:*:subnet/*",
                "arn:aws:ec2:*:*:security-group/*"
            ],
            "Condition": {
                "Null": {
                    "aws:ResourceTag/AmazonEVSManaged": "false"
                }
            }
        },
        {
            "Sid": "TagOnCreateEC2Resources",
            "Effect": "Allow",
            "Action": [
                "ec2:CreateTags"
            ],
```

```
            "Resource": [
                "arn:aws:ec2:*:*:network-interface/*",
                "arn:aws:ec2:*:*:instance/*",
                "arn:aws:ec2:*:*:volume/*",
                "arn:aws:ec2:*:*:subnet/*"
            ],
            "Condition": {
                "StringEquals": {
                    "ec2:CreateAction": [
                        "CreateNetworkInterface",
                        "RunInstances",
                        "CreateSubnet",
                        "CreateVolume"
                    ]
                },
                "Null": {
                    "aws:RequestTag/AmazonEVSManaged": "false"
                }
            }
        },
        {
            "Sid": "DetachNetworkInterface",
            "Effect": "Allow",
            "Action": [
                "ec2:DetachNetworkInterface"
            ],
            "Resource": [
                "arn:aws:ec2:*:*:network-interface/*",
                "arn:aws:ec2:*:*:instance/*"
            ],
            "Condition": {
                "Null": {
                    "aws:ResourceTag/AmazonEVSManaged": "false"
                }
            }
        },
        {
            "Sid": "RunInstancesWithTag",
            "Effect": "Allow",
            "Action": [
                "ec2:RunInstances"
            ],
            "Resource": [
                "arn:aws:ec2:*:*:instance/*",
```

```
                "arn:aws:ec2:*:*:volume/*"
            ],
            "Condition": {
                "Null": {
                    "aws:RequestTag/AmazonEVSManaged": "false"
                }
            }
        },
        {
            "Sid": "RunInstancesWithTagResource",
            "Effect": "Allow",
            "Action": [
                "ec2:RunInstances"
            ],
            "Resource": [
                "arn:aws:ec2:*:*:subnet/*",
                "arn:aws:ec2:*:*:network-interface/*"
            ],
            "Condition": {
                "Null": {
                    "aws:ResourceTag/AmazonEVSManaged": "false"
                }
            }
        },
        {
            "Sid": "RunInstancesWithoutTag",
            "Effect": "Allow",
            "Action": [
                "ec2:RunInstances"
            ],
            "Resource": [
                "arn:aws:ec2:*:*:image/*",
                "arn:aws:ec2:*:*:security-group/*",
                "arn:aws:ec2:*:*:key-pair/*",
                "arn:aws:ec2:*:*:placement-group/*"
            ]
        },
        {
            "Sid": "TerminateInstancesWithTag",
            "Effect": "Allow",
            "Action": [
                "ec2:TerminateInstances",
                "ec2:ModifyInstanceAttribute"
            ],
```

```
            "Resource": "arn:aws:ec2:*:*:instance/*",
            "Condition": {
                "Null": {
                    "aws:ResourceTag/AmazonEVSManaged": "false"
                }
            }
        },
        {
            "Sid": "CreateSubnetWithTag",
            "Effect": "Allow",
            "Action": [
                "ec2:CreateSubnet"
            ],
            "Resource": [
                "arn:aws:ec2:*:*:subnet/*"
            ],
            "Condition": {
                "Null": {
                    "aws:RequestTag/AmazonEVSManaged": "false"
                }
            }
        },
        {
            "Sid": "CreateSubnetWithoutTagForExistingVPC",
            "Effect": "Allow",
            "Action": [
                "ec2:CreateSubnet"
            ],
            "Resource": [
                "arn:aws:ec2:*:*:vpc/*"
            ]
        },
        {
            "Sid": "DeleteSubnetWithTag",
            "Effect": "Allow",
            "Action": [
                "ec2:DeleteSubnet"
            ],
            "Resource": "arn:aws:ec2:*:*:subnet/*",
            "Condition": {
                "Null": {
                    "aws:ResourceTag/AmazonEVSManaged": "false"
                }
            }
```

```
        },
        {
            "Sid": "VolumeDeletion",
            "Effect": "Allow",
            "Action": [
                "ec2:DeleteVolume"
            ],
            "Resource": "arn:aws:ec2:*:*:volume/*",
             "Condition": {
                "Null": {
                    "aws:ResourceTag/AmazonEVSManaged": "false"
                }
            }
        },
        {
            "Sid": "VolumeDetachment",
            "Effect": "Allow",
            "Action": [
                "ec2:DetachVolume"
            ],
            "Resource": [
                "arn:aws:ec2:*:*:instance/*",
                "arn:aws:ec2:*:*:volume/*"
            ],
            "Condition": {
                "Null": {
                    "aws:ResourceTag/AmazonEVSManaged": "false"
                }
            }
        },
        {
            "Sid": "RouteServerAccess",
            "Effect": "Allow",
            "Action": [
                "ec2:GetRouteServerAssociations"
            ],
            "Resource": "arn:aws:ec2:*:*:route-server/*"

        },
        {
            "Sid": "EVSServiceLinkedRole",
            "Effect": "Allow",
            "Action": [
                "iam:CreateServiceLinkedRole"
```

```
            ],
            "Resource": "arn:aws:iam::*:role/aws-service-role/evs.amazonaws.com/
AWSServiceRoleForEVS",
            "Condition": {
                "StringLike": {
                    "iam:AWSServiceName": "evs.amazonaws.com"
                }
            }
        },
        {
            "Sid": "SecretsManagerCreateWithTag",
            "Effect": "Allow",
            "Action": [
                "secretsmanager:CreateSecret"
            ],
            "Resource": "arn:aws:secretsmanager:*:*:secret:*",
            "Condition": {
                "StringEquals": {
                    "aws:RequestTag/AmazonEVSManaged": "true"
                },
                "ForAllValues:StringEquals": {
                    "aws:TagKeys": [
                        "AmazonEVSManaged"
                    ]
                }
            }
        },
        {
            "Sid": "SecretsManagerTagging",
            "Effect": "Allow",
            "Action": [
                "secretsmanager:TagResource"
            ],
            "Resource": "arn:aws:secretsmanager:*:*:secret:*",
            "Condition": {
                "StringEquals": {
                    "aws:RequestTag/AmazonEVSManaged": "true",
                    "aws:ResourceTag/AmazonEVSManaged": "true"
                },
                "ForAllValues:StringEquals": {
                    "aws:TagKeys": [
                        "AmazonEVSManaged"
                    ]
                }
```

```
            }
        },
        {
            "Sid": "SecretsManagerOps",
            "Effect": "Allow",
            "Action": [
                "secretsmanager:DeleteSecret",
                "secretsmanager:GetSecretValue",
                "secretsmanager:UpdateSecret"
            ],
            "Resource": "arn:aws:secretsmanager:*:*:secret:*",
            "Condition": {
                "Null": {
                    "aws:ResourceTag/AmazonEVSManaged": "false"
                }
            }
        },
        {
            "Sid": "SecretsManagerRandomPassword",
            "Effect": "Allow",
            "Action": [
                "secretsmanager:GetRandomPassword"
            ],
            "Resource": "*"
        },
        {
            "Sid": "EVSPermissions",
            "Effect": "Allow",
            "Action": [
                "evs:*"
            ],
            "Resource": "*"
        },
        {
            "Sid": "KMSKeyAccessInConsole",
            "Effect": "Allow",
            "Action": [
                "kms:DescribeKey"
            ],
            "Resource": "arn:aws:kms:*:*:key/*"
        },

        {
            "Sid": "KMSKeyAliasAccess",
```

```
            "Effect": "Allow",
            "Action": [
                "kms:ListAliases"
            ],
            "Resource": "*"
        }
    ]
}
```

Get and list Amazon EVS environments, hosts, and VLANs

This example policy includes the minimum permissions required for an administrator to get and list all Amazon EVS environments, hosts, and VLANs within a given account in the us-east-2 AWS Region.

```
{
  "Version": "2012-10-17"&TCX5-2025-waiver;,
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "evs:Get*",
        "evs:List*"
      ],
      "Resource": "*"
    }
  ]
}
```

Troubleshooting Amazon EVS identity and access

Use the following information to help you diagnose and fix common issues that you might encounter when working with Amazon EVS and IAM.

Topics

- AccessDeniedException
- I want to allow people outside of my AWS account to access my Amazon EVS resources

AccessDeniedException

If you receive an `AccessDeniedException` when calling an AWS API operation, then the IAM principal credentials that you're using don't have the required permissions to make that call.

```
An error occurred (AccessDeniedException) when calling the CreateEnvironment operation:
User: arn:aws:iam::111122223333:user/user_name is not authorized to perform:
evs:CreateEnvironment on resource: arn:aws:evs:region:111122223333:environment/my-env
```

In the previous example message, the user does not have permissions to call the Amazon EVS `CreateEnvironment` API operation. To provide Amazon EVS admin permissions to an IAM principal, see the section called "Amazon EVS identity-based policy examples".

For more general information about IAM, see Control access to AWS resources using policies in the *IAM User Guide*.

I want to allow people outside of my AWS account to access my Amazon EVS resources

You can create a role that users in other accounts or people outside of your organization can use to access your resources. You can specify who is trusted to assume the role. For services that support resource-based policies or access control lists (ACLs), you can use those policies to grant people access to your resources.

To learn more, consult the following:

- To learn whether Amazon EVS supports these features, see the section called "How Amazon EVS works with IAM".
- To learn how to provide access to your resources across AWS accounts that you own, see Providing access to an IAM user in another AWS account that you own in the *IAM User Guide*.
- To learn how to provide access to your resources to third-party AWS accounts, see Providing access to AWS accounts owned by third parties in the *IAM User Guide*.
- To learn how to provide access through identity federation, see Providing Access to Externally Authenticated Users (Identity Federation) in the *IAM User Guide*.
- To learn the difference between using roles and resource-based policies for cross-account access, see How IAM roles differ from resource-based policies in the *IAM User Guide*.

AWS managed policies for Amazon EVS

An AWS managed policy is a standalone policy that is created and administered by AWS. AWS managed policies are designed to provide permissions for many common use cases so that you can start assigning permissions to users, groups, and roles.

Keep in mind that AWS managed policies might not grant least-privilege permissions for your specific use cases because they're available for all AWS customers to use. We recommend that you reduce permissions further by defining customer managed policies that are specific to your use cases.

You cannot change the permissions defined in AWS managed policies. If AWS updates the permissions defined in an AWS managed policy, the update affects all principal identities (users, groups, and roles) that the policy is attached to. AWS is most likely to update an AWS managed policy when a new AWS service is launched or new API operations become available for existing services. For more information, see AWS managed policies in the *IAM User Guide*.

AWS managed policy: AmazonEVSServiceRolePolicy

You can't attach `AmazonEVSServiceRolePolicy` to your IAM entities. This policy is attached to a service-linked role that allows Amazon EVS to perform actions on your behalf. For more information, see the section called "Using service-linked roles". When you create an environment using an IAM principal that has the `iam:CreateServiceLinkedRole` permission, the `AWSServiceRoleforAmazonEVS` service-linked role is automatically created for you with this policy attached to it.

This policy allows the `AWSServiceRoleForAmazonEVS` service-linked role to call AWS services on your behalf.

Permissions details

This policy includes the following permissions that allow Amazon EVS to complete the following tasks.

- `ec2` - Discover VPC networking components, including subnets and VPCs. Create, modify, tag, and delete elastic network interfaces that are used to establish a persistent connection between Amazon EVS and the VMware Virtual Cloud Foundation (VCF) SDDC Manager appliance in your VPC subnet. This connectivity is required for Amazon EVS to deploy, manage, and monitor the VCF deployment.

- `ec2` - Delete EC2 instances that Amazon EVS creates when you make an EVS host deletion request. Describe and modify EC2 instance attributes so that default EC2 instance termination and stop protection can be disabled if needed to support EVS host deletion.
- `ec2` - Manage EBS volumes for Cloud Builder installation and cleanup. During environment creation, Cloud Builder is installed onto one of the Amazon EVS deployed hosts to perform VCF configuration changes. After completion, Amazon EVS removes Cloud Builder by detaching and deleting the EC2 volume it is stored on.
- `ec2` - Delete EVS VLAN subnets on your behalf if you request environment deletion.
- `secretsmanager` - Delete VCF passwords that Amazon EVS creates and stores in AWS Secrets Manager during environment creation. Amazon EVS deletes all secrets that the service creates in your account if environment creation fails, or if you request environment deletion.
- `cloudwatch` - Publish AWS usage metrics to CloudWatch for Amazon EVS resources that have quotas.

To view more details about the policy, including the latest version of the JSON policy document, see AmazonEVSServiceRolePolicy in the *AWS Managed Policy Reference Guide*.

Amazon EVS updates to AWS managed policies

View details about updates to AWS managed policies for Amazon EVS since this service began tracking these changes. For automatic alerts about changes to this page, subscribe to the RSS feed on the *Document history* page.

Change	Description	Date
AmazonEVSServiceRolePolicy — Policy updated	Amazon EVS updated the policy to add comprehensive resource management capabilities including EC2 instance management, EBS volume operations, and AWS Secrets Manager integration. To learn more, see the section called “AWS managed policy: AmazonEVSServiceRolePolicy”.	August 14, 2025

Change	Description	Date
AmazonEVSServiceRolePolicy — Policy updated	Amazon EVS updated the policy to allow the service to delete EVS VLAN subnets, as well as publish Amazon EVS usage metrics to CloudWatch. To learn more, see the section called "AWS managed policy: AmazonEVSServiceRolePolicy".	July 14, 2025
AmazonEVSServiceRolePolicy — New policy added	Amazon EVS added a new policy that allow the service to connect to a VPC subnet in the customer account. This connection is required for service functionality. To learn more, see the section called "AWS managed policy: AmazonEVSServiceRolePolicy".	June 09, 2025
Amazon EVS started tracking changes	Amazon EVS started tracking changes for its AWS managed policies.	June 09, 2025

Using service-linked roles for Amazon EVS

Amazon Elastic VMware Service uses AWS Identity and Access Management (IAM) service-linked roles. A service-linked role is a unique type of IAM role that is linked directly to Amazon EVS. Service-linked roles are predefined by Amazon EVS and include all the permissions that the service requires to call other AWS services on your behalf.

A service-linked role makes setting up Amazon EVS easier because you don't have to manually add the necessary permissions. Amazon EVS defines the permissions of its service-linked roles, and unless defined otherwise, only Amazon EVS can assume its roles. The defined permissions include

the trust policy and the permissions policy, and that permissions policy cannot be attached to any other IAM entity.

You can delete a service-linked role only after first deleting their related resources. This protects your Amazon EVS resources because you can't inadvertently remove permission to access the resources.

For information about other services that support service-linked roles, see AWS services that work with IAM and look for the services that have **Yes** in the **Service-linked role** column. Choose a **Yes** with a link to view the service-linked role documentation for that service.

Service-linked role permissions for Amazon EVS

Amazon EVS uses the service-linked role named `AWSServiceRoleForAmazonEVS`. The role allows Amazon EVS to manage environments in your account. The attached policy allows the role to manage the following resources: EVS elastic network interfaces, EVS VLAN subnets, EVS hosts, VPCs, and CloudWatch metrics.

The `AWSServiceRoleForAmazonEVS` service-linked role trusts the following services to assume the role:

- `evs.amazonaws.com`

The role permissions policy allows Amazon EVS to complete the following actions on the specified resources:

- AmazonEVSServiceRolePolicy

You must configure permissions to allow an IAM entity (such as a user, group, or role) to create, edit, or delete a service-linked role. For more information, see Service-linked role permissions in the *IAM User Guide*.

Creating a service-linked role for Amazon EVS

You don't need to manually create a service-linked role. When you create an environment in the AWS Management Console, the AWS CLI, or the AWS API, Amazon EVS creates the service-linked role for you.

If you delete this service-linked role, and then need to create it again, you can use the same process to recreate the role in your account. When you create an environment, Amazon EVS creates the service-linked role for you again.

Editing a service-linked role for Amazon EVS

Amazon EVS does not allow you to edit the `AWSServiceRoleForAmazonEVS` service-linked role. After you create a service-linked role, you cannot change the name of the role because various entities might reference the role. However, you can edit the description of the role using IAM. For more information, see Editing a service-linked role in the *IAM User Guide*.

Deleting a service-linked role for Amazon EVS

If you no longer need to use a feature or service that requires a service-linked role, we recommend that you delete that role. That way you don't have an unused entity that is not actively monitored or maintained. However, you must clean up your service-linked role before you can manually delete it.

Cleaning up a service-linked role

Before you can use IAM to delete a service-linked role, you must first delete any resources used by the role. For steps to delete an Amazon EVS environment with hosts, see the section called "Delete the Amazon EVS hosts and environment".

> **Note**
>
> If the Amazon EVS service is using the role when you try to delete the resources, then the deletion might fail. If that happens, wait for a few minutes and try the operation again.

Manually delete the service-linked role

Use the IAM console, the AWS CLI, or the AWS API to delete the `AWSServiceRoleForAmazonEVS` service-linked role. For more information, see Deleting a service-linked role in the *IAM User Guide*.

Supported regions for Amazon EVS service-linked roles

Amazon EVS supports using service-linked roles in all of the regions where the service is available. For more information, see Amazon Elastic VMware Service endpoints and quotas in the *AWS General Reference Guide*.

Resilience in Amazon EVS

The AWS global infrastructure is built around AWS Regions and Availability Zones. AWS Regions provide multiple physically separated and isolated Availability Zones, which are connected through low-latency, high-throughput, and highly redundant networking. With Availability Zones, you can design and operate applications and databases that automatically fail over between zones without interruption. Availability Zones are more highly available, fault tolerant, and scalable than traditional single or multiple data center infrastructures.

Amazon EVS environments are available in a single AWS Availability Zone. To ensure high availability of Amazon EVS Single-AZ infrastructure, Amazon EVS offers the following features:

> **Note**
>
> Amazon EVS only supports Single-AZ deployments at this time.

- Amazon EVS supports the use of AWS Elastic Disaster Recovery to automate the backup and recovery of your data.
- Amazon EVS deploys an Active/Standby NSX Edge cluster with two NSX Edge nodes per VCF requirements. The NSX Edge nodes run on different hosts to ensure high availability and allow for quick failover in the rare event that an NSX Edge node fails.
- Amazon EVS deploys a minimal environment of four ESXi hosts, which VCF requires. Additional hosts can be added post-deployment. This is a VMware design requirement to ensure proper vSAN quorum and maintain availability during maintenance operations and host failures. For more information, see vSphere Cluster Design for VMware Cloud Foundation in the VMware Cloud Foundation documentation.
- Amazon EVS supports the use of an EC2 partition placement group or cluster placement group for EC2 hosts. The partition placement group spreads your EC2 instances across logical partitions such that groups of instances in one partition do not share the underlying hardware with groups of instances in different partitions. This strategy helps reduce the likelihood of correlated hardware failures for large distributed workloads. Cluster placement groups are used to place your EC2 instances within the same physical rack to ensure low latecy. For more information, see Partition placement groups in the *Amazon EC2 User Guide*.

For more information about AWS Regions and Availability Zones, see AWS Global Infrastructure.

VMware component resilience

Amazon EVS customers are responsible for configuring the VMware components running on Amazon EVS to ensure high availability of your virtual machines (VMs) and workload resiliency.

Amazon EVS supports the following VMware Cloud Foundation (VCF) resiliency features:

- vSphere replication - Provides host-based, asynchronous replication of your VMs for disaster recovery and workload migration purposes. For more information, see How vSphere Replication Works in the VMware vSphere Replication documentation.
- vSAN data protection - Enables you to quickly recover VMs from operational failure for ransomware attacks, using native snapshots stored locally on the vSAN cluster. For more information, see Using vSAN Data Protection in the vSAN documentation.
- vSphere HA - Provides automatic failover for VMs in the event of a host failure. For more information, see High Availability Design for vCenter Server for VMware Cloud Foundation in the VCF documentation.
- vSphere Fault Tolerance (FT) - Provides continuous availability for mission-critical VMs by creating and maintaining another VM that is identical and continuously available to replace it in the event of a failover situation. For more information, see How Fault Tolerance Works in the vSphere documentation.
- vSAN Failure to Tolerate (FTT) - A vSAN setting that determines how many host failures a VM can withstand before becoming inaccessible. This defines the level of redundancy and fault tolerance for your virtual machines within the vSAN cluster. For more information, see Tolerate Additional Failures with Fault Domain in vSAN Cluster in the vSAN documentation.

Using Amazon EVS with other AWS services

Amazon EVS is integrated with other AWS services to provide additional solutions. This topic identifies some of the services that Amazon EVS works with to add functionality.

Topics

Create Amazon EVS resources with AWS CloudFormation

Amazon EVS is integrated with AWS CloudFormation, a service that helps you model and set up your AWS resources so that you can spend less time creating and managing your resources and infrastructure. You create a template that describes all the AWS resources that you want, an Amazon EVS environment for example, and AWS CloudFormation takes care of provisioning and configuring those resources for you.

When you use AWS CloudFormation, you can reuse your template to set up your Amazon EVS resources consistently and repeatedly. Just describe your resources once, and then provision the same resources over and over in multiple AWS accounts and Regions.

Amazon EVS and AWS CloudFormation templates

To provision and configure resources for Amazon EVS and related services, you must understand AWS CloudFormation templates. Templates are formatted text files in JSON or YAML. These templates describe the resources that you want to provision in your AWS CloudFormation stacks. If you're unfamiliar with JSON or YAML, you can use AWS CloudFormation Designer to help you get started with AWS CloudFormation templates. For more information, see What is AWS CloudFormation Designer? in the *AWS CloudFormation User Guide*.

Amazon EVS supports creating environments in AWS CloudFormation. For more information, including examples of JSON and YAML templates for your environments, see Amazon EVS resource type reference in the *AWS CloudFormation User Guide*.

Learn more about AWS CloudFormation

To learn more about AWS CloudFormation, see the following resources:

- AWS CloudFormation
- AWS CloudFormation User Guide
- AWS CloudFormation Command Line Interface User Guide

Run high-performance workloads with Amazon FSx for NetApp ONTAP

Amazon FSx for NetApp ONTAP is a storage service that allows you to launch and run fully managed ONTAP file systems in the cloud. ONTAP is NetApp's file system technology that provides a widely adopted set of data access and data management capabilities. FSx for ONTAP provides the features, performance, and APIs of on-premises NetApp file systems with the agility, scalability, and simplicity of a fully managed AWS service. For more information, see the FSx for ONTAP User Guide.

Amazon EVS supports the use of Amazon FSx for NetApp ONTAP as an NFS/iSCSI datastore and as guest-connected storage for VMware virtual machines running on Amazon EVS.

Configure FSx for NetApp ONTAP as an NFS datastore

The following procedure details the minimum steps required to configure FSx for NetApp ONTAP as an NFS datastore for Amazon EVS using the FSx console and the VMware vSphere client interface that runs on Amazon EVS.

Prerequisites

Before you use Amazon EVS with Amazon FSx for NetApp ONTAP, make sure that the following prerequisite tasks have been completed.

- An Amazon EVS environment is deployed in your Virtual Private Cloud (VPC). For more information, see *Getting started*.
- You have access to your vSphere client running on Amazon EVS.
- You or your storage admin must have necessary permissions to create and manage FSx for ONTAP file systems in your VPC. For more information, see Identity and access management for Amazon FSx for NetApp ONTAP.

Your IAM principal has appropriate permissions to create and manage FSx for ONTAP file systems in your VPC. For more information, see the section called “Create and manage an Amazon EVS environment”.

Create an FSx for NetApp ONTAP file system

1. Go to the Amazon FSx console.
2. Choose **Create file system**.
3. Select **Amazon FSx for NetApp ONTAP**.
4. Choose **Next**.
5. Select **Standard create**.
6. For **Deployment type**, select a Single-AZ deployment option.

> **Note**
>
> Amazon EVS only supports Single-AZ deployments at this time.

7. For **SSD storage capacity**, specify 1024 GiB.
8. For **Throughput capacity**, choose **Specify throughput capacity**. Choose at least 512 MB/s for Single-AZ 1 or at least 768 MB/s for Single-AZ 2.
9. Select the Amazon EVS VPC that has connectivity to your Amazon EVS VLAN subnets.
10. Select a security group that permits all required FSx for ONTAP NFS traffic to the Amazon EVS host VMkernel management VLAN subnet.
11. Select the Amazon EVS service access subnet that your file system will be deployed in. For more information, see the section called “Service access subnet”.
12. For **Junction path**, specify a meaningful name such as `/vol1` to identify this volume in vSphere.
13. Within **Default volume configuration**, set **Storage efficiency** to **Enabled**.
14. Leave the remaining setting at their default values and choose **Next**.
15. Review the file system attributes and choose **Create file system**.

Retrieve the NFS DNS name for the storage virtual machine

1. Go to the Amazon FSx console.
2. On the left menu, select **File systems**.

3. Choose the newly created file system.
4. Select the **Storage virtual machines** tab.
5. Choose the storage virtual machine.
6. Select the **Endpoints** tab.
7. Copy the network file system (NFS) DNS name for later use in VMware Vsphere.

Create an NFS datastore in vSphere using the FSx for ONTAP volume

Follow the instructions in Create an NFS Datastore in vSphere Environmentto configure Amazon FSx for NetApp ONTAP as external storage for VMware vSphere. For the Server setting in the vSphere client interface, use the storage virtual machine (SVM) NFS DNS name that you copied in the previous step.

Configure FSx for NetApp ONTAP FSx as an iSCSI datastore

The following procedure details the minimum steps required to configure FSx for NetApp ONTAP as an iSCSI datastore for Amazon EVS using the FSx console and VMware vSphere client interface that runs on Amazon EVS.

Prerequisites

Before you use Amazon EVS with Amazon FSx for NetApp ONTAP, make sure that the following prerequisite tasks have been completed.

- An Amazon EVS environment is deployed in your Virtual Private Cloud (VPC). For more information, see *Getting started*.
- You have access to your vSphere client running on Amazon EVS.
- You or your storage admin must have necessary permissions to create and manage FSx for ONTAP file systems in your VPC. For more information, see Identity and access management for Amazon FSx for NetApp ONTAP.

Create an FSx for NetApp ONTAP file system

1. Go to the Amazon FSx console.
2. Choose **Create file system**.
3. Select **Amazon FSx for NetApp ONTAP**.

4. Choose **Next**.
5. Select **Standard create**.
6. For **Deployment type**, select a Single-AZ deployment option.

> **Note**
>
> Amazon EVS only supports Single-AZ deployments at this time.

7. For **SSD storage capacity**, specify 1024 GiB.
8. For **Throughput capacity**, choose **Specify throughput capacity**. Choose at least 512 MB/s for Single-AZ 1 or at least 768 MB/s for Single-AZ 2.
9. Select the Amazon EVS VPC that has connectivity to your Amazon EVS VLAN subnets.
10. Select a security group that permits all required FSx for ONTAP iSCSI traffic to the Amazon EVS host VMkernel management VLAN subnet.
11. Select the Amazon EVS service access subnet that your file system will be deployed in. For more information, see the section called “Service access subnet”.
12. Within **Default volume configuration**, set **Storage efficiency** to **Enabled**.
13. Leave the remaining setting at their default values and choose **Next**.
14. Review the file system attributes and choose **Create file system**.

Configure a software iSCSI adapter in vSphere for ESXi host storage

For each ESXi host, you must configure the software iSCSI adapter so that your ESXi hosts can use it to access iSCSI storage. For instruction to configure the software iSCSI adapter for ESXi hosts in vSphere, see Add or Remove the Software iSCSI Adapter in the VMware vSphere product documentation.

After you configure the software iSCSI adapter, copy the iSCSI Qualified Name (IQN) associated with an iSCSI adapter. These values will be used later.

Create an iSCSI LUN

FSx for ONTAP allows you to create Logical Unit Numbers (LUNs) that are specifically intended for iSCSI access, providing shared block storage to your ESXi hosts. You use the NetApp ONTAP CLI to create a LUN.

Below is a sample command.

Note

It is recommended to configure the LUN size to 90% of the volume size.

```
lun create -vserver <your_svm_name> \
-path /vol/<your_volume_name>/<lun_name> \
-size <required_datastore_capacity> \
-ostype vmware
```

For more information, see Creating an iSCSI LUN in the *FSx for ONTAP User Guide*.

Configure and map an initiator group to the iSCSI LUN

Now that you have created an iSCSI LUN, the next step in the process is to create an initiator group (`igroup`) to connect the volume to the cluster and map the LUN to the initiator group. You use the NetApp ONTAP CLI to perform these actions.

1. Configure the initiator group.

   Below is a sample command. For `--initiator`, use the iSCSI adapter IQNs that you copied in the previous step.

   ```
   igroup create <svm_name> \
   -igroup <initiator_group_name> \
   -protocol iscsi \
   -ostype vmware \
   -initiator <esxi_iqn_1>,<esxi_iqn_2>,<esxi_iqn_3>,<esxi_iqn_4>
   ```

2. Confirm that the `igroup` exists.

   ```
   lun igroup show
   ```

3. Map the LUN to the initiator group. Below is a sample command.

   ```
   lun mapping create -vserver <svm_name> \
   -path /vol/<vol_name>/<lun_name> \
   -igroup <initiator_group_name> \
   -lun-id <scsi_lun_number_for this_datastore>
   ```

4. Use the `lun show -path` command to confirm that the LUN is created, online, and mapped.

```
lun show -path /vol/<vol_name>/<lun_name> -fields state,mapped,serial-hex
```

For more information, see Provisioning iSCSI for Linux or Provisioning iSCSI for Windows in the *FSx for ONTAP User Guide*.

Configure dynamic discovery of the iSCSI LUN in vSphere

To allow the ESXi hosts to see the iSCSI LUN, you must configure dynamic discovery for each host in the vSphere client interface. For the iSCSI server field, enter the (NFS) DNS name that you copied in the previous step. For more information, see Configure Dynamic or Static Discovery for iSCSI and iSER on ESXi Host in the VMware vSphere product documentation.

Create a VMFS Datastore in VMware vSphere using the iSCSI LUN

Virtual Machine File System (VMFS) datastores serve as repositories for VMware virtual machines. Follow the instruction in Create a vSphere VMFS Datastore to set up the VMFS datastore in VMware vSphere using the iSCSI LUN that you previously configured.

Troubleshooting

This chapter details some common issues encountered while creating or managing Amazon EVS environments.

Troubleshoot failed environment status checks

Amazon EVS performs automated checks on your environment to identify issues. You can view the status of your environment to identify specific and detectable problems.

Review environment status check information

To investigate impaired environments using the Amazon EVS console

1. Open the Amazon EVS console.
2. In the navigation pane, choose **Environments**, and then select your environment.
3. Select the **Details** tab to see an overview of the environment.
4. Check the **Environment status**. Hover on this field to expand a popover with individual results for each environment status check.

Reachability check failed

The reachability check verifies that Amazon EVS has a persistent connection to SDDC Manager. If Amazon EVS cannot reach the environment, this check fails.

If this check fails, Amazon EVS can no longer reach SDDC Manager to validate the environment status, and hosts can no longer be added to the environment. Reachability failure will also cause the license key re-use and key coverage checks to fail, and the host count check to return an **Unknown** response.

To ensure reachability, check the following:

- Ensure that your certificates are valid and unexpired. You can use the SDDC Manager UI or vSphere client to manage certificates in a VCF environment. After deployment, it is recommended that you replace all certificates of the VMware Cloud Foundation management

domain. For more information, see Managing Certificates in VMware Cloud Foundation in the VMware Cloud Foundation documentation.

- Ensure that your DNS servers are reachable from the service access subnet, DNS records are valid, and no duplicate hostnames or IP addresses exist.
- If you wish to create your own firewall rules, follow these guidelines:
  - Allow TCP/UDP access to the DNS servers.
  - Allow HTTPS/SSH access to the host management VLAN subnet.
  - Allow HTTPS/SSH access to the Management VM VLAN subnet.

If you are still unable to resolve the issue after following this guidance, we recommend that you reach out to AWS Support for further assistance.

Host count check failed

This check verifies that your environment has a minimum of four hosts, which is a requirement for VCF 5.2.1.

If this check fails, you will need to add hosts so that your environment meets this minimum requirement. Amazon EVS only supports environments with 4 to 16 hosts.

Key re-use check failed

This check verifies that the VCF license key is not in use by another Amazon EVS environment. VCF licenses can be used for only one Amazon EVS environment. This check fails if you supply VCF license keys in an environment creation request that are already in use by another environment.

If this check fails, you receive an error response that the Amazon EVS environment could not be created. To address the issue, review your license settings in SDDC Manager and replace any previously used licenses with unused licenses.

> **Important**
>
> Use the SDDC Manager user interface to manage VCF solution and vSAN license keys. Amazon EVS requires that you maintain valid VCF solution and vSAN license keys in SDDC Manager for the service to function properly. While keys must be assigned to your hosts and vSAN cluster using the vSphere Client, you must make sure that those keys also appear in the licensing screen of the SDDC Manager user interface.

Key coverage check failed

This check verifies that your VCF license key assigned to vCenter Server allocates sufficient vCPU cores and vSAN storage capacity (TiB) for all deployed hosts.

If this check fails, you receive an error response that the Amazon EVS environment could not be created. Key coverage failure may indicate one of the following issues:

- VCF licenses are not properly assigned to vCenter Server. You must assign a license to vCenter Server before its evaluation period expires or the currently assigned license expires. If this is the issue, review license assignments in SDDC Manager.
- Current VCF licenses don't cover vCPU core and vSAN storage capacity needs. The VCF solution key must have at least 256 cores. The vSAN license key must have at least 110 TiB of vSAN capacity. If this is the issue, add vSAN licenses in SDDC Manager until your usage needs are met.

If the above actions don't resolve the issue, reach out to AWS Support for further assistance.

> **Important**
>
> Use the SDDC Manager user interface to manage VCF solution and vSAN license keys. Amazon EVS requires that you maintain valid VCF solution and vSAN license keys in SDDC Manager for the service to function properly. While keys must be assigned to your hosts and vSAN cluster using the vSphere Client, you must make sure that those keys also appear in the licensing screen of the SDDC Manager user interface.

vSphere HA agent on this host could not reach isolation address

In the vCenter user interface, with the ESXi host selected, you see the message "vSphere HA agent on this host could not reach isolation address <IPv6 address>".

This error message indicates that the vSphere HA agent on a host is unable to reach the default IPv6 isolation address that vSphere HA uses for heartbeat checks. The error message is not indicative of a problem, and only occurs because Amazon EVS does not support IPv6 at this time. The absence of IPV6 support for Amazon EVS does not affect the core functionality of vSphere HA.

vSAN upgrade prechecks fail for ESXi host cluster

When attempting to upgrade the ESXi host cluster using SDDC Manager, vSAN disk-related prechecks may fail. This is because Amazon EVS uses vSAN Express Storage Architecture (ESA), and the upgrade prechecks do not apply to vSAN ESA. For more information, see the Broadcom knowledge base article on this topic.

Add host failure due to incompatible cluster image

Problem

When you add a host to your environment, the host has the latest available version of the EVS custom vendor add-on. If your environment uses hosts with an older add-on version, adding new hosts fails with an error that the new host is not compatible with your cluster image. To fix this issue, you must use vSphere Lifecyle Manager to extract the latest available add-on version from the newly added host.

Solution

Follow these steps.

1. Go to the Hosts and Clusters inventory in VMware vCenter Server.
2. Extract the add-on from the newly added host by creating a temporary empty cluster.
3. Under **Basics**, select **Import image from an existing host in the vCenter Inventory** and create the cluster. Leave all other settings as the default.
4. Once this temporary cluster is created with the extracted image, you can delete the temporary cluster. The add-on will now be available in your vSphere Lifecycle Manager depot.
5. Go to your environment cluster and select the **Updates** tab.
6. Edit your cluster image and change the add-on version to the newly extracted version.
7. Choose **Save**.
8. In SDDC Manager, retry the failed add host task. This will remediate your cluster hosts, updating all hosts to the latest add-on version. Cluster image remediation will require host reboots.

SDDC Manager fails VCF host validation during host commissioning

Problem

If you have updated your ESXi version after the Amazon EVS environment deployment, SDDC manager may fail during VCF host validation in the commission hosts step. To fix this issue, you will have to use vSphere Lifecyle Manager to upgrade ESXi on the newly added host.

Solution

Follow these steps.

> **Important**
>
> These steps require temporarily adding the host to vCenter outside of SDDC Manager. Using vSphere Lifecyle Manager for any operations other than ESXi upgrades may render your host unusable, and require you to delete and create a new Amazon EVS host.

1. Go to the Hosts and Clusters inventory in VMware vCenter Server.
2. Add the host temporarily to your virtual data center, ensuring to select **manage host with an image**. The host will be removed in a later step after the ESXi upgrade is complete. For more information, see How to Add a Host to Your vSphere Data Center or Folder in the vSphere documentation.
3. Once the host is added to vSphere, upgrade the ESX version on the host. This can be done in the **Updates** tab of your host. Edit the host image to match the ESX version of your cluster.
4. After the upgrade has completed, remove the host from your vCenter inventory. For more information, see How to Remove an ESXi Host from Your vCenter Server Instance in the vSphere documentation.
5. Commission your host in SDDC manager. For more information, see Commission Hosts in the VMware Cloud Foundation documentation.
6. After the host is commissioned, add the host to your cluster using SDDC Manager.

Logging Amazon EVS API calls using AWS CloudTrail

Amazon EVS is integrated with AWS CloudTrail, a service that provides a record of actions taken by an IAM user, IAM role, or an AWS service in Amazon EVS. CloudTrail captures all AWS API calls for Amazon EVS as events. The calls captured include calls from the Amazon EVS console and code calls to the Amazon EVS API operations. If you create a trail, you can enable continuous delivery of CloudTrail events to an Amazon S3 bucket, including events for Amazon EVS. If you don't configure a trail, you can still view the most recent events in the CloudTrail console in **Event history**. Using the information collected by CloudTrail, you can determine the request that was made to Amazon EVS, the IP address from which the request was made, who made the request, when it was made, and additional details.

To learn more about CloudTrail, see the AWS CloudTrail User Guide.

Note

Amazon EVS does not log user activity for non-AWS components, such as activity within your VCF environment. These activities are logged in various VMware consoles such as vSphere and NSX Manager.
If centralized VCF logging is desired, you can configure VCF monitoring solutions such as VMware Cloud Foundation Operations to achieve this result.

Amazon EVS information in CloudTrail

CloudTrail is enabled on your AWS account when you create the account. When activity occurs in Amazon EVS, that activity is recorded in a CloudTrail event along with other AWS service events in **Event history**. You can view, search, and download recent events in your AWS account. For more information, see Viewing Events with CloudTrail Event History.

For an ongoing record of events in your AWS account, including events for Amazon EVS, create a trail. A *trail* enables CloudTrail to deliver log files to an Amazon S3 bucket. By default, when you create a trail in the console, the trail applies to all AWS Regions. The trail logs events from all Regions in the AWS partition and delivers the log files to the Amazon S3 bucket that you specify. Additionally, you can configure other AWS services to further analyze and act upon the event data collected in CloudTrail logs. For more information, see the following:

- Overview for creating a trail

- CloudTrail supported services and integrations
- Configuring Amazon SNS notifications for CloudTrail
- Receiving CloudTrail log files from multiple Regions
- Receiving CloudTrail log files from multiple accounts

All Amazon EVS actions are logged by CloudTrail and are documented in the Amazon EVS API Reference. For example, calls to the `CreateEnvironment`, `GetEnvironment` and `DeleteEnvironment` actions generate entries in the CloudTrail log files.

Every event or log entry contains information about who generated the request. The identity information helps you determine the following:

- Whether the request was made with root or AWS Identity and Access Management (IAM) user credentials.
- Whether the request was made with temporary security credentials for a role or federated user.
- Whether the request was made by another AWS service.

For more information, see the CloudTrail userIdentity element.

Understanding Amazon EVS log file entries

A trail is a configuration that enables delivery of events as log files to an Amazon S3 bucket that you specify. CloudTrail log files contain one or more log entries. An event represents a single request from any source and includes information about the requested action, the date and time of the action, request parameters, and so on. CloudTrail log files aren't an ordered stack trace of the public API calls, so they don't appear in any specific order.

Amazon EVS service quotas

Amazon EVS has integrated with Service Quotas, an AWS service that you can use to view and manage your quotas from a central location. For more information, see What Is Service Quotas? in the *Service Quotas User Guide*.

With Service Quotas integration, you can use the AWS Management Console or AWS CLI to look up the value of your Amazon EVS quotas and request a quota increase for adjustable quotas. For more information, see Requesting a quota increase in the *Service Quotas User Guide* and request-service-quota-increase in the *AWS CLI Command Reference*.

For more information about Amazon EVS service quotas, see Amazon EVS quotas in the *AWS General Reference Guide*.

Important

To enable Amazon EVS environment creation, your host count per EVS environment quota must be at least 4. The default quota is 0. To increase this quota, go to the Service Quotas console and request a quota increase.

Important

Ensure that your EC2 Running On-Demand Standard Instance quota reflects the number of vCPUs that you need for all of the EC2 instances that you will use on Amazon EVS. Each i4i.metal instance uses 128 vCPUs. For information about increasing EC2 service quotas, see Request an increase in the *Amazon EC2 User Guide*.

Note

If you plan to use EC2 Dedicated Hosts for your Amazon EVS environment, ensure that your EC2 Dedicated i4i Hosts quota reflects the number of Dedicated Hosts that you intend to use for a desired Region. For information about increasing EC2 service quotas, see Request an increase in the *Amazon EC2 User Guide*.

> **Note**
>
> Amazon CloudWatch collects AWS usage metrics for Amazon EVS resources that have quotas (environment and hosts). For more information, see CloudWatch Usage Metrics in the *Amazon CloudWatch User Guide*.

View Amazon EVS service quotas in the AWS Management Console

1. Open the Service Quotas console.
2. In the left navigation pane, choose **AWS services**.
3. From the **AWS services** list, search for and select **Amazon Elastic VMware Service**.
4. Choose **View quotas**.

   In the **Service quotas** list, you can see the service quota name, applied value (if it's available), AWS default quota, and whether the quota value is adjustable.
5. To view additional information about a service quota, such as the description, choose the quota name.
6. (Optional) To request a quota increase, select the quota that you want to increase, select **Request increase at account level**, enter or select the required information, and select **Request**.

To work more with service quotas using the AWS Management Console, see the Service Quotas User Guide. To request a quota increase, see Requesting a Quota Increase in the *Service Quotas User Guide*.

View Amazon EVS service quotas with the AWS CLI

Run the following command to view your Amazon EVS quotas.

```
aws service-quotas list-aws-default-service-quotas \
    --query 'Quotas[*].
{Adjustable:Adjustable,Name:QuotaName,Value:Value,Code:QuotaCode}' \
    --service-code evs \
    --output table
```

Note

The quota returned is the number of Amazon EVS environments or hosts that can be created in this account in the current AWS Region.

To work more with service quotas using the AWS CLI, see service-quotas in the *AWS CLI Command Reference*. To request a quota increase, see the request-service-quota-increase command in the *AWS CLI Command Reference*.

Document history for the Amazon Elastic VMware Service User Guide

The following table describes the documentation releases for Amazon Elastic VMware Service.

Change	Description	Date
Updated AmazonEVS ServiceRolePolicy	Amazon EVS has updated the managed policy `AmazonEVSServiceRolePolicy` to add comprehensive resource management capabilities including EC2 instance management, EBS volume operations, and AWS Secrets Manager integration. For information, see Amazon EVS updates to AWS managed policies.	August 14, 2025
Updated AmazonEVS ServiceRolePolicy	Updated the AWS managed policy AmazonEVSServiceRolePolicy.	August 4, 2025
Released the environment count per AWS account quota	Amazon EVS released environment count per AWS account quota. The environment count per AWS account quota represents the maximum number of Amazon EVS environments that can be created in a given account and Region.	July 8, 2025

Amazon EVS released in the Europe (Ireland) Region	Amazon EVS was released in the Europe (Ireland) Region.	June 18, 2025
Released AmazonEVS ServiceRolePolicy	The AWS managed policy AmazonEVSServiceRolePolicy was released.	June 9, 2025
Initial User Guide release	The Amazon Elastic VMware Service User Guide was released. The Amazon EVS User Guide describes all Amazon EVS concepts and provides instructions on using the various features with both the console and the command line interface.	June 9, 2025