

Deploy the ASAv on AWS

You can deploy the ASAv on the Amazon Web Services (AWS) cloud.

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Overview

The ASAv runs the same software as physical ASAs to deliver proven security functionality in a virtual form factor. The ASAv can be deployed in the public AWS cloud. It can then be configured to protect virtual and physical data center workloads that expand, contract, or shift their location over time.

The ASAv support the following AWS instance types.

Table 1: AWS Supported Instance Types

Instance type	Attributes			ASAv Model Support	Notes
	vCPUs	Memory (GB)	Maximum Number of Interfaces		
c3.large	2	3.75	3	• ASAv10 • ASAv30	We do not recommend the ASAv30 on large instances due to resource underprovisioning.
c4.large	2	3.75	3		
m4.large	2	8	2		
c3.xlarge	4	7.5	4	ASAv30	Only the ASAv30 is supported on xlarge instances.
c4.xlarge	4	7.5	4		
m4.xlarge	4	16	4		

You create an account on AWS, set up the ASAv using the AWS Wizard, and chose an Amazon Machine Image (AMI). The AMI is a template that contains the software configuration needed to launch your instance.

Important The AMI images are not available for download outside of the AWS environment.

Prerequisites

- Create an account on aws.amazon.com.
- License the ASAv. Until you license the ASAv, it will run in degraded mode, which allows only 100 connections and throughput of 100 Kbps. See Licensing for the ASAv.
- Interface requirements:
  - Management interface
  - Inside and outside interfaces
  - (Optional) Additional subnet (DMZ)
- Communications paths:
  - Management interface—Used to connect the ASAv to the ASDM; can't be used for through traffic.
  - Inside interface (required)—Used to connect the ASAv to inside hosts.
  - Outside interface (required)—Used to connect the ASAv to the public network.
  - DMZ interface (optional)—Used to connect the ASAv to the DMZ network when using the c3.xlarge interface.
- For ASAv system requirements, see Cisco ASA Compatibility.

Guidelines and Limitations

Supported Features

The ASAv on AWS supports the following features:

- Support for Amazon EC2 C5 instances, the next generation of the Amazon EC2 Compute Optimized instance family.
- Deployment in the Virtual Private Cloud (VPC)
- Enhanced networking (SR-IOV) where available
- Deployment from Amazon Marketplace
- Maximum of four vCPUs per instance
- User deployment of L3 networks

- Routed mode (default)
- Amazon CloudWatch

Unsupported Features

The ASAv on AWS does not support the following:

- Console access (management is performed using SSH or ASDM over network interfaces)
- VLAN
- Promiscuous mode (no sniffing or transparent mode firewall support)
- Multiple context mode
- Clustering
- ASAv native HA
- EtherChannel is only supported on direct physical interfaces
- VM import/export
- Hypervisor agnostic packaging
- VMware ESXi
- Broadcast/multicast messages

  These messages are not propagated within AWS so routing protocols that require broadcast/multicast do not function as expected in AWS. VXLAN can operate only with static peers.

- Gratuitous/unsolicited ARPs

  These ARPS are not accepted within AWS so NAT configurations that require gratuitous ARPs or unsolicited ARPs do not function as expected.

- IPv6

Configuration Migration and SSH Authentication

Upgrade impact when using SSH public key authentication—Due to updates to SSH authentication, additional configuration is required to enable SSH public key authentication; as a result, existing SSH configurations using public key authentication no longer work after upgrading. Public key authentication is the default for the ASAv on Amazon Web Services (AWS), so AWS users will see this issue. To avoid loss of SSH connectivity, you can update your configuration before you upgrade. Or you can use ASDM after you upgrade (if you enabled ASDM access) to fix the configuration.

The following is a sample original configuration for a username "admin":

```
username admin nopassword privilege 15
username admin attributes
  ssh authentication publickey 55:06:47:eb:13:75:fc:5c:a8:c1:2c:bb:
  07:80:3a:fc:d9:08:a9:1f:34:76:31:ed:ab:bd:3a:9e:03:14:1e:1b hashed
```

To use the **ssh authentication** command, before you upgrade, enter the following commands:

```
aaa authentication ssh console LOCAL
username admin password <password> privilege 15
```

We recommend setting a password for the username as opposed to keeping the **nopassword** keyword, if present. The **nopassword** keyword means that any password can be entered, not that no password can be entered. Prior to 9.6(2), the **aaa** command was not required for SSH public key authentication, so the **nopassword** keyword was not triggered. Now that the **aaa** command is required, it automatically also allows regular password authentication for a **username** if the **password** (or **nopassword**) keyword is present.

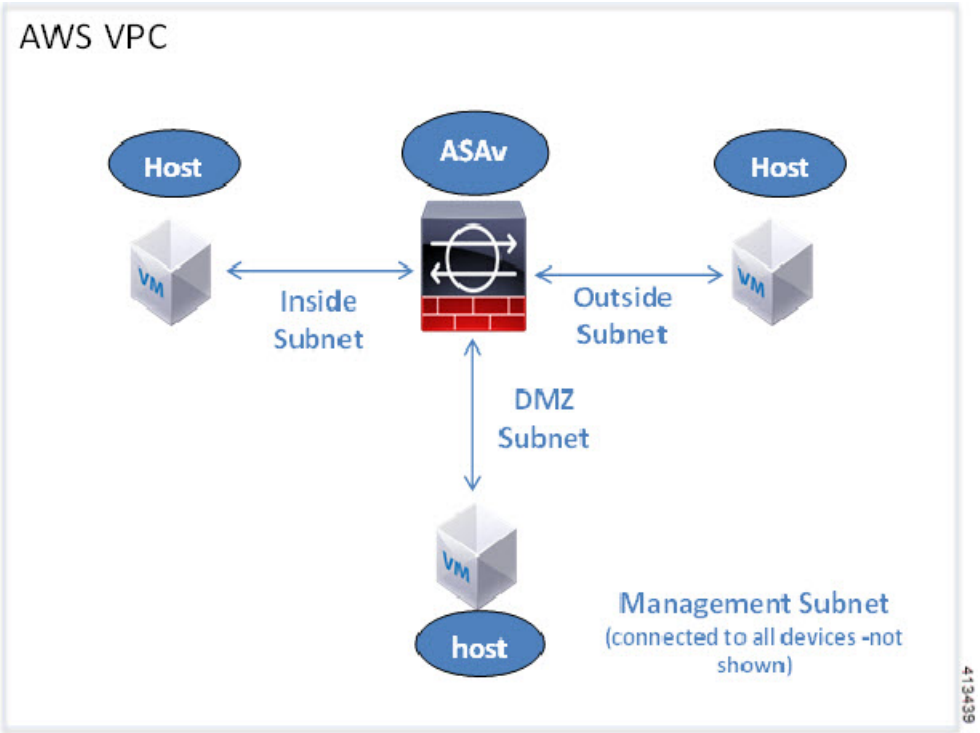
After you upgrade, the **username** command no longer requires the **password** or **nopassword** keyword; you can require that a user cannot enter a password. Therefore, to force public key authentication only, re-enter the **username** command:

```
username admin privilege 15
```

Sample Network Topology

The following figure shows the recommended topology for the ASAv in Routed Firewall Mode with four subnets configured in AWS for the ASAv (management, inside, outside, and DMZ).

Figure 1: Sample ASAv on AWS Deployment



Deploy ASAv

The following procedure provides a top-level list of steps to set up AWS on ASAv. For detailed steps, see Getting Started with AWS.

Procedure

Step 1 Log in to aws.amazon.com and choose your region.

Note
AWS is divided into multiple regions that are isolated from each other. The regions are displayed on the upper-right corner of your page. Resources available in one region do not appear in another region. Check periodically to make sure you are in the intended region.

Step 2 Click **My Account** > **AWS Management Console**, and under **Networking**, click **VPC** > **Start VPC Wizard**, and create your VPC by choosing a single private subnet, and set up the following (use the default settings unless otherwise specified):

- Inside and Outside subnet—Enter a name for the VPC and the subnets.
- Internet Gateway—Enter the name of the Internet gateway. It enables direct connectivity over the internet.
- Outside table—Add an entry to enable outbound traffic to the internet (add 0.0.0.0/0 to the internet gateway).

Step 3 Click **My Account** > **AWS Management Console** > **EC2**, and then click **Create an Instance**.

- Select your AMI, for example, Ubuntu Server 14.04 LTS.

  Use the AMI identified in the your image delivery notification.
- Choose the instance type supported by ASAv, for example, c3.large.
- Configure the instance (CPUs and memory are fixed).
- Expand the **Advanced Details** section, and in the optional **User data** field you can enter the Day 0 configuration, which is the text input containing the ASAv configuration applied when the ASAv is launched. For more information on Day 0 configuration with more information, such as Smart Licensing, see Prepare the Day 0 Configuration File.
  - **Management interface**: If you choose to provide the Day 0 configuration details, you *must* provide management interface details, which should be configured to use DHCP.
  - **Data interfaces**: IP addresses for the data interfaces will be assigned and configured only if you provide that information as part of the Day 0 configuration. Data interfaces can be configured to use DHCP, or if the network interfaces to be attached are already created and the IP addresses that are known, you can provide the IP address details in the Day 0 configuration.
  - **Without Day 0 Configuration**: If you deploy the ASAv *without* providing the Day 0 configuration, ASAv applies the default ASAv configuration where it fetches the IP addresses of the attached interfaces from the AWS metadata server and allocates the IP addresses (the data interfaces get the IP addresses assigned but the ENIs will be down). The Management0/0 interface will be up and gets the IP address configured with the DHCP address. See IP Addressing in your VPC for information about Amazon EC2 and Amazon VPC IP addressing.

    Sample Day 0 Configuration -

```
! ASA Version 9.x.1.200
!
interface management0/0
management-only
nameif management
security-level 100
ip address dhcp setroute

no shutdown
!


crypto key generate rsa modulus 2048
ssh 0 0 management
ssh ::/0 management
ssh timeout 60
ssh version 2
username admin password Q1w2e3r4 privilege 15
username admin attributes
service-type admin
aaa authentication ssh console LOCAL
!
same-security-traffic permit inter-interface
same-security-traffic permit intra-interface
access-list allow-all extended permit ip any any
access-list allow-all extended permit ip any6 any6
access-group allow-all global
!
interface G0/0
nameif outside
ip address dhcp setroute

no shutdown
!
interface G0/1
nameif inside
ip address dhcp

no shutdown
!
```

- Storage: Retain the default values.
- Tag Instance: You can create a lot of tags to classify your devices. Giving a name to your devices helps you locate them easily.
- Security Group: Create a security group and name it. The security group is a virtual firewall for an instance to control inbound and outbound traffic.

  By default the Security Group is open to all addresses. Change the rules to only allow SSH in from addresses used to access your ASAv.

  For information on how the security group controls the traffic, refer to AWS documentation - Control traffic to your AWS resources using security groups.
- Expand the **Advanced Details** section and in the **User data** field you can optionally enter a Day 0 configuration, which is text input that contains the ASAv configuration applied when the ASAv is launched. For more information on how to configure the Day 0 configuration with more information, such as Smart Licensing, see Prepare the Day 0 Configuration File.

- **Management interface** - If you choose to provide a Day 0 configuration, you **must** provide management interface details, which should be configured to use DHCP.
- **Data interfaces** - IP addresses for the data interfaces will be assigned and configured only if you provide that information as part of the Day 0 configuration. Data interfaces can be configured to use DHCP or, if the network interfaces to be attached are already created and the IP addresses are known, you can provide the IP details in the Day 0 configuration.
- **Without Day 0 Configuration** - If you deploy the ASAv **without** providing the Day 0 configuration, the ASAv applies the default ASAv configuration where it fetches the IPs of the attached interfaces from the AWS metadata server and allocates the IP addresses (the data interfaces will get the IPs assigned but the ENIs will be down). Management0/0 interface will be up and gets the IP configured with DHCP address. See IP Addressing in your VPC for information about Amazon EC2 and Amazon VPC IP addressing.

- Review your configuration and then click **Launch**.

Step 4 Create a Key Pair.

Caution
Give the key pair a name you will recognize and download the key to a safe place; the key can never be downloaded again. If you lose the key pair, you must destroy your instances and redeploy them again.

Step 5 Click **Launch Instance** to deploy your ASAv.

Step 6 Click **My Account** > **AWS Management Console** > **EC2** > **Launch an Instance** > **My AMIs**.

Step 7 Make sure that the Source/Destination Check is disabled per interface for the ASAv.

AWS default settings only allow an instance to receive traffic for its IP address (IPv4) and only allow an instance to send traffic from its own IP address (IPv4) . To enable the ASAv to act as a routed hop, you must disable the Source/Destination Check on each of the ASAv's traffic interfaces (inside, outside, and DMZ).