aws

User Guide

Amazon Inspector

Amazon Inspector: User Guide

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What is Amazon Inspector?

Amazon Inspector is a vulnerability management service that automatically discovers workloads and continually scans them for software vulnerabilities and unintended network exposure. Amazon Inspector discovers and scans Amazon EC2 instances, container images in Amazon ECR, and Lambda functions. When Amazon Inspector detects a software vulnerability or unintended network exposure, it creates a finding, which is a detailed report about the issue. You can manage findings in the Amazon Inspector console or API.

Topics

Features of Amazon Inspector

Centrally manage multiple Amazon Inspector accounts

If your AWS environment has multiple accounts, you can centrally manage your environment through a single account by using AWS Organizations. Using this approach, you can designate an account as the delegated administrator account for Amazon Inspector.

Amazon Inspector can be activated for your entire organization with a single click. Additionally, you can automate activating the service for future members whenever they join your organization. The Amazon Inspector delegated administrator account can manage findings data and certain settings for members of the organization. This includes viewing aggregated findings details for all member accounts, activating or deactivating scans for member accounts, and reviewing scanned resources within the AWS organization.

Continuously scan your environment for vulnerabilities and network exposure

With Amazon Inspector, you don't need to manually schedule or configure assessment scans. Amazon Inspector automatically discovers and begins scanning your eligible resources. Amazon Inspector continues to assess your environment throughout the lifecycle of your resources by automatically rescanning resources in response to changes that could introduce a new vulnerability, such as: installing a new package in an EC2 instance, installing a patch, and when a new common vulnerabilities and exposures (CVE) that impacts the resource is published. Unlike

traditional security scanning software, Amazon Inspector has minimal impact on the performance of your fleet.

When vulnerabilities or open network paths are identified, Amazon Inspector produces a finding that you can investigate. The finding includes comprehensive details about the vulnerability, the affected resource, and remediation recommendations. If you appropriately remediate a finding, Amazon Inspector automatically detects the remediation and closes the finding.

Assess vulnerabilities accurately with the Amazon Inspector Risk score

As Amazon Inspector collects information about your environment through scans, it provides severity scores specifically tailored to your environment. Amazon Inspector examines the security metrics that compose the National Vulnerability Database (NVD) base score for a vulnerability and adjusts them according to your compute environment. For example, the service may lower the Amazon Inspector score of a finding for an Amazon EC2 instance if the vulnerability is exploitable over the network but no open network path to the internet is available from the instance. This score is in CVSS format and is a modification of the base Common Vulnerability Scoring System (CVSS) score provided by NVD.

Identify high-impact findings with the Amazon Inspector dashboard

The Amazon Inspector dashboard offers a high-level view of findings from across your environment. From the dashboard, you can access the granular details of a finding. The dashboard contains streamlined information about scan coverage in your environment, your most critical findings, and which resources have the most findings. The risk-based remediation panel in the Amazon Inspector dashboard presents the findings that affect the largest number of instances and images. This panel makes it easier to identify the findings with the greatest impact on your environment, review finding details, and review suggested solutions.

Manage your findings using customizable views

In addition to the dashboard, the Amazon Inspector console offers a **Findings** view. This page lists all findings for your environment and provides the details of individual findings. You can view findings grouped by category or vulnerability type. In each view, you can further customize your results using filters. You can also use filters to create suppression rules that hide unwanted findings from your views.

You can use filters and suppression rules to generate finding reports that show all findings or a customized selection of findings. Reports can be generated in CSV or JSON formats.

Monitor and process findings with other services and systems

To support integration with other services and systems, Amazon Inspector publishes findings to Amazon EventBridge as finding events. EventBridge is a serverless event bus service that can route findings data to targets such as AWS Lambda functions and Amazon Simple Notification Service (Amazon SNS) topics. With EventBridge, you can monitor and process findings in near-real time as part of your existing security and compliance workflows.

If you have activated AWS Security Hub, then Amazon Inspector will also publish findings to Security Hub. Security Hub is a service that provides a comprehensive view of your security posture across your AWS environment and helps you check your environment against security industry standards and best practices. With Security Hub, you can more easily monitor and process your findings as part of a broader analysis of your organization's security posture in AWS.

Accessing Amazon Inspector

Amazon Inspector is available in most AWS Regions. For a list of Regions where Amazon Inspector is currently available, see Amazon Inspector endpoints and quotas in the *Amazon Web Services General Reference*. To learn more about AWS Regions, see Managing AWS Regions in the *Amazon Web Services General Reference*. In each Region, you can work with Amazon Inspector in the following ways.

AWS Management Console

The AWS Management Console is a browser-based interface that you can use to create and manage AWS resources. As part of that console, the Amazon Inspector console provides access to your Amazon Inspector account and resources. You can perform Amazon Inspector tasks from the Amazon Inspector console.

AWS command line tools

With AWS command line tools, you can issue commands at your system's command line to perform Amazon Inspector tasks. Using the command line can be faster and more convenient than using the console. The command line tools are also useful if you want to build scripts that perform tasks.

AWS provides two sets of command line tools: the AWS Command Line Interface (AWS CLI) and the AWS Tools for PowerShell. For information about installing and using the AWS CLI, see the AWS Command Line Interface User Guide. For information about installing and using the Tools for PowerShell, see the AWS Tools for PowerShell User Guide.

AWS SDKs

AWS provides SDKs that consist of libraries and sample code for various programming languages and platforms, including Java, Go, Python, C++, and .NET. The SDKs provide convenient, programmatic access to Amazon Inspector and other AWS services. They also handle tasks such as cryptographically signing requests, managing errors, and retrying requests automatically. For information about installing and using the AWS SDKs, see Tools to Build on AWS.

Amazon Inspector REST API

The Amazon Inspector REST API gives you comprehensive, programmatic access to your Amazon Inspector account and resources. With this API, you can send HTTPS requests directly to Amazon Inspector. However, unlike the AWS command line tools and SDKs, use of this API requires your application to handle low-level details such as generating a hash to sign a request.

Getting started with Amazon Inspector

This section provides information to consider before activating Amazon Inspector and a getting started tutorial describing how to activate Amazon Inspector and view your findings in the Amazon Inspector console and with the Amazon Inspector API.

Topics

Before activating Amazon Inspector

Before activating Amazon Inspector, consider the following:

Amazon Inspector is a Regional service

Your data is stored in the AWS Region where you activate Amazon Inspector. Repeat the steps in the first part of the getting started tutorial for all AWS Regions where you plan to use Amazon Inspector.

Amazon Inspector creates the service-linked roles AWSServiceRoleForAmazonInspector2 and AWSServiceRoleForAmazonInspector2Agentless

A service-linked role is a role in AWS Identity and Access Management (IAM) that's linked to an AWS servce. AWSServiceRoleForAmazonInspector2 and AWSServiceRoleForAmazonInspector2Agentless allow Amazon Inspector to access AWS services required to perform security assessments.

IAM identities with administrator permissions can enable Amazon Inspector

Protect your credentials by creating users with IAM or AWS IAM Identity Center. This helps you make sure users only have the permissions required to manage Amazon Inspector. For more information, see AWS managed policy: AmazonInspectorFullAccess.

Hybrid scanning is automatically enabled

Hybrid scanning includes agent-based scanning and agentless scanning. By default, Amazon Inspector uses these scan methods on all eligible Amazon EC2 instances. For more information, see Scanning Amazon EC2 instances with Amazon Inspector.

Amazon ECR scanning and Lambda function scanning doesn't require the SSM agent

Agent-based scanning uses the SSM agent to collect software inventory. Agentless scanning uses Amazon EBS snapshots to collect software inverntory.

> **Note**
>
> By default, the SSM agent is already installed in Amazon EC2 instances based on Amazon Machine Images. However, you might need to activate the SSM agent manually in some cases. For more information, see Working with the SSM agent in the *AWS Systems Manager User Guide*.

Monthly costs are based on workloads scanned

For more information, see Amazon Inspector pricing.

Getting started tutorial: Activating Amazon Inspector

This topic describes how to activate Amazon Inspector for a standalone account environment (member account) and multi-account environment (delegated administrator account). When you activate Amazon Inspector, it automatically begins discovering workloads and scanning them for software vulnerabilities and unintended network exposure.

Standalone account environment

The following procedure describes how to activate Amazon Inspector in the console for a member account. To programatically activate Amazon Inspector, inspector2-enablement-with-cli.

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. Choose **Get Started**.
3. Choose **Activate Amazon Inspector**.

When you activate Amazon Inspector for a standalone account, all scan types are activated by default. For information about member accounts, see Understanding the delegated administrator account and member accounts in Amazon Inspector.

Multi-account environment

The following procedure describes how to activate Amazon Inspector in the console for a delegated administrator account. To programatically activate Amazon Inspector for multiple accounts, use the Amazon Inspector inspector2-enablement-with-cli shell script.

> **Note**
>
> You must use the AWS Organizations management account to complete this procedure. Only the AWS Organizations management account can designate a delegated administrator. Permissions might be required to designate a delegated administrator. For more information, see Permissions required to designate a delegated administrator.

When you activate Amazon Inspector for the first time, Amazon Inspector creates the service linked role `AWSServiceRoleForAmazonInspector` for the account. For information about how Amazon Inspector uses service-linked roles, see Using service-linked roles for Amazon Inspector.

To designate a delegated administrator for Amazon Inspector

1. Sign in to the AWS Organizations management account, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. Choose **Get started**.
3. Under **Delegated administrator**, enter the 12-digit ID of the AWS account you want to designate as the delegated administrator.
4. Choose **Delegate**, and then choose **Delegate** again.
5. (Optional) If you want to activate Amazon Inspector for the AWS Organizations management account, choose **Activate Amazon Inspector** under **Service permissions**.

When you designate a delegated administrator, all scan types are activated for the account by default. For information about the delegated administrator account,see Understanding the delegated administrator account and member accounts in Amazon Inspector.

Automated scan types in Amazon Inspector

Amazon Inspector uses a purpose-built scanning engine that monitors your resources for software vulnerabilities and unintended network exposure. When Amazon Inspector detects a software vulnerability or unintended network exposure, it creates a finding. When you activate Amazon Inspector for the first time, your account is automatically enrolled in all scan types, which include Amazon Amazon EC2 scanning, Amazon ECR Scanning, and Lambda standard scanning.

> **Note**
>
> Lambda code scanning is an optional layer of Lambda function scanning that you can activate at any time.

Topics

Overview of Amazon Inspector scan types

Amazon Inspector provides different scan types, which focus on specific resource types in your AWS environment.

Amazon EC2 scanning

When you activate Amazon EC2 scanning, Amazon Inspector scans your EC2 instances for common vulnerabilities and exposures (CVEs), network exposure issues, network reachability issues, operating system and programming language package vulnerabilities. Amazon Inspector performs scans through the use of the SSM agent installed on your instance or through Amazon EBS snapshots of instances. For more information, see Scanning Amazon EC2 instances with

Amazon Inspector. By default, when you activate Amazon EC2 scanning, you automatically enable hybrid scanning mode. For more information, see Agentless scanning.

Amazon ECR scanning

When you activate Amazon ECR scanning, Amazon Inspector converts all of the repositories in your private registry from basic scanning container repositories to enhanced scanning repositories. You can configure this setting with inclusion rules to scan on-push only or to scan select repositories. Amazon Inspector scans all images pushed within the last 30 days or pulled within the last 90 days. Amazon Inspector continues to monitor images for 90 days by default. You can change this setting at any time. For more information, see Scanning Amazon Elastic Container Registry container images with Amazon Inspector.

Lambda standard scanning

When you activate Lambda standard scanning, Amazon Inspector discovers all of the Lambda functions in your account and immediately scans them for vulnerabilities. Amazon Inspector scans new Lambda functions and layers when they're deployed. Amazon Inspector rescans them when they're updated or when new CVEs are published. For more information, scanning, see Scanning AWS Lambda functions with Amazon Inspector.

Lambda standard scanning + Lambda code scanning

When you activate Lambda code scanning, Amazon Inspector discovers the Lambda functions and layers in your account and scans them for code vulnerabilities. This type of scanning evaluates application package dependencies used in a Lambda function for CVEs. When you activate this scan type, you also activate Lambda standard scanning. For more information, see Scanning AWS Lambda functions with Amazon Inspector.

Code Security for Amazon Inspector

This scan type leverages the Amazon Q Developer scanning engine to scan first-party application code, third-party application dependencies, and Infrastructure as Code for vulnerabilities For more information, see Code Security for Amazon Inspector.

Activating a scan type

You can activate a scan type at any time. When you activate a scan type, Amazon Inspector begins scanning eligible resources for the scan type.

Amazon EC2 scanning

This scan type extracts metadata from an Amazon EC2 instance before comparing the metadata against rules collected from security advisories. When you activate this scan type, Amazon Inspector scans all eligible Amazon EC2 instances in your account for package vulnerabilities and network reachability issues. After you activate this scan type, you can view how many instances are being scanned in the **Instances** tab.

Amazon ECR scanning

This scan type scans container images and container repositories in Amazon ECR. When you activate this scan type, you change the scanning configuration setting for your private registry from basic scanning to enhanced scanning. After you activate Amazon ECR scanning, you can view how many images and repositories are being scanned in the **Container images** and **Container repositories** tabs.

Lambda standard scanning + Lambda code scanning

Lambda standard scanning is the default Lambda scan type. When you activate Lambda standard scanning, all of your Lambda functions are scanned for software vulnerabilities, as long as they were invoked or updated in the last 90 days. After you activate Lambda standard scanning, you view how many Lambda functions are being scanned in the **Lambda functions** tab.

Lambda code scanning scans custom application code in a Lambda function. When you activate Lambda code scanning, all of your Lambda functions will be scanned for code vulnerabilities, as long as they were invoked or updated in the last 90 days. After you activate Lambda standard scanning, you can view how many Lambda functions are being scanned for code vulnerabilities in the **Lambda functions** tab.

> **Note**
>
> You can activate Lambda standard scanning and Lambda code scanning independently or together.

Amazon Inspector Code Security

This scan type scans first-party application code, third-party application dependencies, and Infrastructure as Code for vulnerabilities. When you activate Code Security, Amazon Inspector begins scanning your code repositores for code vulnerabilities based on your scan configurations. After you activate Amazon Inspector Code Security, you can view how many code repositories are being scanned in the **Code repositories** tab.

Activating scans

The following procedure describes how to activate a scan type in Amazon Inspector.

> **Note**
>
> If you're the delegated administrator for an AWS organization, you can enable Amazon Inspector scan types for multiple accounts in multiple Regions using a shell script. For more information, see inspector2-enablement-with-cli on GitHub. Otherwise, complete the following steps while signed in as the Amazon Inspector delegated administrator.

Console

To activate scans

1. Open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. Using the AWS Region selector in the upper-right corner of the page, select the Region where you want to activate a new scan type.
3. In the navigation pane, choose **Account management**.
4. On the **Account management** page, select the accounts for which you would like to activate a scan type.
5. Choose **Activate** and select the type of scanning you would like to activate.
6. (Recommended) Repeat these steps in each AWS Region for which you want to activate that scan type.

API

Run the Enable API operation. In the request, provide the account IDs you are activating scans for, and idempotency token, and one or more of `EC2`, `ECR`, `LAMBDA`, or `LAMBDA_CODE` for `resourceTypes` to activate scans of that type.

Scanning Amazon EC2 instances with Amazon Inspector

Amazon Inspector Amazon EC2 scanning extracts metadata from your EC2 instance before comparing the metadata against rules collected from security advisories. Amazon Inspector scans

instances for package vulnerabilities and network reachability issues to produce findings. Amazon Inspector performs network reachability scans once every 12 hours and package vulnerability scans on a variable cadence that depends on the scan method associated with the EC2 instance.

Package vulnerability scans can be performed using an agent-based or agentless scan method. Both of these scan methods determine how and when Amazon Inspector collects the software inventory from an EC2 instance for package vulnerability scans. Agent-based scanning collects software inventory using the SSM agent, and agentless scanning collects software inventory using on Amazon EBS snapshots.

Amazon Inspector uses the scan methods that you activate for your account. When you activate Amazon Inspector for the first time, your account is automatically enrolled in hybrid scanning, which uses both scan methods. However, you can change this setting at any time. For information about how to activate a scan type, see Activating a scan type. This section provides information about Amazon EC2 scanning.

> **Note**
>
> Amazon EC2 scanning does not scan filesystem directories related to virtual environment even if they are provisioned through deep inspection. For example, the path `/var/lib/docker/` is not scanned because it's commonly used for container run times.

Agent-based scanning

Agent-based scans are performed continuously using the SSM agent on all eligible instances. For agent-based scans, Amazon Inspector uses SSM associations, and plugins installed through these associations, to collect software inventory from your instances. In addition to package vulnerability scans for operating system packages, Amazon Inspector agent-based scanning can also detect package vulnerabilities for application programming language packages in Linux-based instances through Amazon Inspector deep inspection for Linux-based Amazon EC2 instances.

The following process explains how Amazon Inspector uses SSM to collect inventory and perform agent-based scans:

1. Amazon Inspector creates SSM associations in your account to collect inventory from your instances. For some Instance types (Windows, and Linux), these associations install plugins on individual instances to collect inventory.
2. Using SSM, Amazon Inspector extracts package inventory from an instance.

3. Amazon Inspector evaluates the extracted inventory and generates findings for any detected vulnerabilities.

> **Note**
>
> For agent-based scanning, the Amazon EC2 instance must be managed by SSM in same AWS account.

Eligible instances

Amazon Inspector will use the agent-based method to scan an instance if it meets the following conditions:

- The instance has a supported OS. For a list of supported OS see the **Agent-based scan support** column of the section called "Supported operating systems: Amazon EC2 scanning".
- The instance is not excluded from scans by Amazon Inspector EC2 exclusion tags.
- The instance is SSM managed. For instructions on verifying and configuring the agent, see Configuring the SSM Agent.

Agent-based scan behaviors

When using the agent-based scan method, Amazon Inspector initiates new vulnerability scans of EC2 instances in the following situations:

- When you launch a new EC2 instance.
- When you install new software on an existing EC2 instance (Linux and Mac).
- When Amazon Inspector adds a new common vulnerabilities and exposures (CVE) item to its database, and that CVE is relevant to your EC2 instance (Linux and Mac).

Amazon Inspector updates the **Last scanned** field for an EC2 instance when an initial scan is completed. After this, the **Last scanned** field is updated when Amazon Inspector evaluates SSM inventory (every 30 minutes by default), or when an instance is re-scanned because a new CVE impacting that instance was added to the Amazon Inspector database.

You can check when an EC2 instance was last scanned for vulnerabilities from the Instances tab on the **Account management** page, or by using the ListCoverage command.

Configuring the SSM Agent

In order for Amazon Inspector to detect software vulnerabilities for an Amazon EC2 instance using the agent-based scan method, the instance must be a managed instance in Amazon EC2 Systems Manager (SSM). An SSM managed instance has the SSM Agent installed and running, and SSM has permission to manage the instance. If you are already using SSM to manage your instances, no other steps are needed for agent-based scans.

The SSM Agent is installed by default on EC2 instances created from some Amazon Machine Images (AMIs). For more information, see About SSM Agent in the *AWS Systems Manager User Guide*. However, even if it's installed, you may need to activate the SSM Agent manually, and grant SSM permission to manage your instance.

The following procedure describes how to configure an Amazon EC2 instance as a managed instance using an IAM instance profile. The procedure also provides links to more detailed information in the *AWS Systems Manager User Guide*.

AmazonSSMManagedInstanceCore is the recommended policy to use when you attach an instance profile. This policy has all the permissions needed for Amazon Inspector EC2 scanning.

> **Note**
>
> You can also automate SSM management of all your EC2 instances, without the use of IAM instance profiles using SSM Default Host Management Configuration. For more information, see Default Host Management Configuration.

To configure SSM for an Amazon EC2 instance

1. If it's not already installed by your operating system vendor, install the SSM Agent. For more information, see Working with SSM Agent.
2. Use the AWS CLI to verify that the SSM Agent is running. For more information, see Checking SSM Agent status and starting the agent.
3. Grant permission for SSM to manage your instance. You can grant permission by creating an IAM instance profile and attaching it to your instance. We recommend using the AmazonSSMManagedInstanceCore policy, because this policy has the permissions for SSM Distributor, SSM Inventory and SSM State manager, that Amazon Inspector needs for scans. For instructions on creating an instance profile with these permissions and attaching it an instance, see Configure instance permissions for Systems Manager Systems Manager.

4. (Optional) Activate automatic updates for the SSM Agent. For more information, see Automating updates to SSM Agent.
5. (Optional) Configure Systems Manager to use an Amazon Virtual Private Cloud (Amazon VPC) endpoint. For more information, see Create Amazon VPC endpoints.

> **Important**
>
> Amazon Inspector requires a Systems Manager State Manager association in your account to collect software application inventory. Amazon Inspector automatically creates an association called `InspectorInventoryCollection-do-not-delete` if one doesn't already exist.
>
> Amazon Inspector also requires a resource data sync and automatically creates one called `InspectorResourceDataSync-do-not-delete` if one doesn't already exist. For more information, see Configuring resource data sync for Inventory in the *AWS Systems Manager User Guide*. Each account can have a set number of resource data syncs per Region. For more information, see Maximum number of resource data syncs (per AWS account per Region) in SSM endpoints and quotas.

SSM resources created for scanning

Amazon Inspector requires a number of SSM resources in your account to run Amazon EC2 scans. The following resources are created when you first activate Amazon Inspector EC2 scanning:

> **Note**
>
> If any of these SSM resources are deleted while Amazon Inspector Amazon EC2 scanning is activated for your account, Amazon Inspector will attempt to recreate them at the next scan interval.

`InspectorInventoryCollection-do-not-delete`

This is a Systems Manager State Manager (SSM) association that Amazon Inspector uses to collect software application inventory from your Amazon EC2 instances. If your account already has an SSM association for collecting inventory from `InstanceIds*`, Amazon Inspector will use that instead of creating its own.

`InspectorResourceDataSync-do-not-delete`

This is a resource data sync that Amazon Inspector uses to send collected inventory data from your Amazon EC2 instances to an Amazon S3 bucket owned by Amazon Inspector. For more information, see Configuring resource data sync for Inventory in the *AWS Systems Manager User Guide*.

`InspectorDistributor-do-not-delete`

This is an SSM association Amazon Inspector uses for scanning Windows instances. This association installs the Amazon Inspector SSM plugin on your Windows instances. If the plugin file is inadvertently deleted this association will reinstall it at the next association interval.

`InvokeInspectorSsmPlugin-do-not-delete`

This is an SSM association Amazon Inspector uses for scanning Windows instances. This association allows Amazon Inspector to initiate scans using the plugin, you can also use it to set custom intervals for scans of Windows instances. For more information, see Setting custom schedules for Windows instance scans.

`InspectorLinuxDistributor-do-not-delete`

This is an SSM association that Amazon Inspector uses for Amazon EC2 Linux deep inspection. This association installs the Amazon Inspector SSM plugin on your Linux instances.

`InvokeInspectorLinuxSsmPlugin-do-not-delete`

This is an SSM association Amazon Inspector uses for Amazon EC2 Linux deep inspection. This association allows Amazon Inspector to initiate scans using the plugin.

Note

When you deactivate Amazon Inspector Amazon EC2 scanning or deep inspection, the SSM resource `InvokeInspectorLinuxSsmPlugin-do-not-delete` is no longer invoked.

Agentless scanning

Amazon Inspector uses the agentless scanning method on eligible instances when your account is in hybrid scanning mode. Hybrid scanning mode includes agent-based and agentless scans and is automatically enabled when you activate Amazon EC2 scanning.

For agentless scans, Amazon Inspector uses EBS snapshots to collect a software inventory from your instances. Agentless scanning scans instances for operating system and application programming language package vulnerabilities..

> **Note**
>
> When scanning Linux instances for application programming language package vulnerabilities, the agentless method scans all available paths, whereas agent-based scanning only scans the default paths and additional paths you specify as part of Amazon Inspector deep inspection for Linux-based Amazon EC2 instances. This may result in the same instance having different findings depending on whether it is scanned using the agent-based method or agentless method.

The following process explains how Amazon Inspector uses EBS snapshots to collect inventory and perform agentless scans:

1. Amazon Inspector creates an EBS snapshot of all volumes attached to the instance. While Amazon Inspector is using it, the snapshot is stored in your account and tagged with `InspectorScan` as a tag key, and a unique scan ID as the tag value.
2. Amazon Inspector retrieves data from the snapshots using EBS direct APIs and evaluates them for vulnerabilities. Findings are generated for any detected vulnerabilities.
3. Amazon Inspector deletes the EBS snapshots it created in your account.

Eligible instances

Amazon Inspector will use the agentless method to scan an instance if it meets the following conditions:

- The instance has a supported OS. For more information, see the >Agent-based scan support column of the section called “Supported operating systems: Amazon EC2 scanning”.
- The instance has a status of `Unmanaged EC2 instance`, `Stale inventory`, or `No inventory`.
- The instance is backed by Amazon EBS and has one of the following file system formats:
  - `ext3`
  - `ext4`

- `xfs`

- The instance isn't excluded from scans through Amazon EC2 exclusion tags.
- The number of volumes attached to the instance is less than 8 and have a combined size that's less than or equal to 1200 GB.

Agentless scan behaviors

When your account is configured for **Hybrid scanning**, Amazon Inspector performs agentless scans on eligible instances every 24 hours. Amazon Inspector detects and scans newly eligible instances every hour, which includes new instances without SSM agents, or pre-existing instances with statuses that have changed to `SSM_UNMANAGED`.

Amazon Inspector updates the **Last scanned** field for an Amazon EC2 instance whenever it scans extracted snapshots from an instance after an agentless scan.

You can check when an EC2 instance was last scanned for vulnerabilities from the Instances tab on the Account management page, or by using the ListCoverage command.

Managing scan mode

Your EC2 scan mode determines which scan methods Amazon Inspector will use when performing EC2 scans in your account. You can view the scan mode for your account from the EC2 scanning settings page under **General settings**. Standalone accounts or Amazon Inspector delegated administrators can change the scan mode. When you set the scan mode as the Amazon Inspector delegated administrator that scan mode is set for all member accounts in your organization. Amazon Inspector has the following scan modes:

Agent-based scanning – In this scan mode, Amazon Inspector will exclusively use the agent-based scan method when scanning for package vulnerabilities. This scan mode only scans SSM managed instances in your account, but has the benefit of providing continuous scans in response to new CVE's or changes to the instances. Agent-based scanning also provides Amazon Inspector deep Inspection for eligible instances. This is the default scan mode for newly activated accounts.

Hybrid scanning – In this scan mode, Amazon Inspector uses a combination of both agent-based and agentless methods to scan for package vulnerabilities. For eligible EC2 instances that have the SSM agent installed and configured, Amazon Inspector uses the agent-based method. For eligible instances that aren't SSM managed, Amazon Inspector will use the agentless method for eligible EBS-backed instances.

To change the scan mode

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. Using the AWS Region selector in the upper-right corner of the page, select the Region where you want to change your EC2 scan mode.
3. From the side navigation panel, under **General settings**, select **EC2 scanning settings**.
4. Under **Scan Mode**, select **Edit**.
5. Choose a scan mode and then select **Save changes**.

Excluding instances from Amazon Inspector scans

You can exclude Linux and Windows instances from Amazon Inspector scans by tagging these instances with the `InspectorEc2Exclusion` key. Including a tag value is optional. For information about adding tags, see Tag your Amazon EC2 resources.

When you tag an instance for exclusion from Amazon Inspector scans, Amazon Inspector marks the instance as excluded and won't create findings for it. However, the Amazon Inspector SSM plugin will continue to be invoked. To prevent the plugin from being invoked, you must allow access to tags in instance metadata.

> **Note**
>
> You're not charged for excluded instances.

Additionally, you can exclude an encrypted EBS volume from agentless scans by tagging the AWS KMS key used to encrypt that volume with the `InspectorEc2Exclusion` tag. For more information, see Tagging keys.

Supported operating systems

Amazon Inspector scans supported Mac, Windows, and Linux EC2 instance for vulnerabilities in operating system packages. For Linux instances, Amazon Inspector can produce findings for application programming language packages using Amazon Inspector deep inspection for Linux-based Amazon EC2 instances. For Mac and Windows instances only operating system packages are scanned.

For information about supported operating systems, including which operating system can be scanned without an SSM agent, see Amazon EC2 instances status values.

Amazon Inspector deep inspection for Linux-based Amazon EC2 instances

Amazon Inspector expands Amazon EC2 scanning coverage to include deep inspection. With deep inspection, Amazon Inspector detects package vulnerabilities for application programming language packages in your Linux-based Amazon EC2 instances. Amazon Inspector scans default paths for programming language package libraries. However, you can configure custom paths in addition to the paths that Amazon Inspector scans by default.

> **Note**
>
> You can use deep inspection with the Default Host Management Configuration setting. However, you must create or use a role that's configured with the `ssm:PutInventory` and `ssm:GetParameter` permissions.

To perform deep inspection scans for your Linux-based Amazon EC2 instances, Amazon Inspector uses data collected with the Amazon Inspector SSM plugin. To manage the Amazon Inspector SSM plugin and perform deep inspection for Linux, Amazon Inspector automatically creates the SSM association `InvokeInspectorLinuxSsmPlugin-do-not-delete` in your account. Amazon Inspector collects updated application inventory from your Linux-based Amazon EC2 instances every 6 hours.

> **Note**
>
> Deep inspection is not supported for Windows or Mac instances.

This section describes how to manage Amazon Inspector deep inspection for Amazon EC2 instances, including how to set custom paths for Amazon Inspector to scan.

Topics

- Accessing or deactivating deep inspection
- Custom paths for Amazon Inspector deep inspection

- Custom schedules for Amazon Inspector deep inspection
- Supported programming languages

Accessing or deactivating deep inspection

> **Note**
>
> For accounts that activate Amazon Inspector after April 17, 2023, deep inspection is automatically activated as part of Amazon EC2 scanning.

To manage deep inspection

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home
2. From the navigation pane, choose **General settings**, and then choose Amazon EC2 scanning settings.
3. Under **Deep inspection of Amazon EC2 instance**, you can set custom paths for your organization or for your own account.

You can check the activation status programmatically for a single account with the GetEc2DeepInspectionConfiguration API. You can check the activation status programmatically for multiple accounts with the BatchGetMemberEc2DeepInspectionStatus API.

If you activated Amazon Inspector before April 17, 2023, you can activate deep inspection through the console banner or the UpdateEc2DeepInspectionConfiguration API. If you're the delegated administrator for an organization in Amazon Inspector, you can use the BatchUpdateMemberEc2DeepInspectionStatus API to activate deep inspection for yourself and your member accounts.

You can deactivate deep inspection through the UpdateEc2DeepInspectionConfiguration API. Member accounts in an organization can't deactivate deep inspection. Instead, the member account must be deactivated by their delegated administrator using the BatchUpdateMemberEc2DeepInspectionStatus API.

Custom paths for Amazon Inspector deep inspection

You can set custom paths for Amazon Inspector to scan during deep inspection of your Linux Amazon EC2 instances. When you set a custom path, Amazon Inspector scans packages in that directory and all of the sub-directories in it.

All accounts can define up to 5 custom paths. The delegated administrator for an organization can define 10 custom paths.

Amazon Inspector scans all custom paths in addition to the following default paths, which Amazon Inspector scans for all accounts:

- `/usr/lib`
- `/usr/lib64`
- `/usr/local/lib`
- `/usr/local/lib64`

> **Note**
>
> Custom paths must be local paths. Amazon Inspector doesn't scan mapped network paths, such as Network File System mounts or Amazon S3 file system mounts.

Formatting custom paths

A custom path cannot be longer than 256 characters. The following is an example of how a custom path might look:

Example path

`/home/usr1/project01`

> **Note**
>
> The package limit per instance is 5,000. The maximum package inventory collection time is 15 minutes. Amazon Inspector recommends that you choose custom paths to avoid these limits.

Setting a custom path in the Amazon Inspector console and with the Amazon Inspector API

The following procedures describe how to set a custom path for Amazon Inspector deep inspection in the Amazon Inspector console and with the Amazon Inspector API. After you set a custom path, Amazon Inspector includes the path in the next deep inspection.

Console

1. Sign in to the AWS Management Console as the delegated administrator, and open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home
2. Use the AWS Region selector to choose the Region where you want to activate Lambda standard scanning.
3. From the navigation pane, choose **General settings**, and then choose **EC2 scanning settings**.
4. Under **Custom paths for your own account**, choose **Edit**.
5. In the path text boxes, enter your custom paths.
6. Choose **Save**.

API

Run the UpdateEc2DeepInspectionConfiguration command. For `packagePaths` specify an array of paths to scan.

Custom schedules for Amazon Inspector deep inspection

By default, Amazon Inspector collects an application inventory from Amazon EC2 instances every 6 hours. However, you can run the following commands to control how often Amazon Inspector does this.

Example command 1: List associations to view association ID and current interval

The following command shows the association ID for the association `InvokeInspectorLinuxSsmPlugin-do-not-delete`.

```
aws ssm list-associations \
--association-filter-list "key=AssociationName,value=InvokeInspectorLinuxSsmPlugin-do-
not-delete" \
--region your-Region
```

Example command 2: Update association to include new interval

The following command uses the association ID for the association `InvokeInspectorLinuxSsmPlugin-do-not-delete`. You can set the rate for `schedule-expression` from 6 hours to a new interval, such as 12 hours.

```
aws ssm update-association \
--association-id "your-association-ID" \
--association-name "InvokeInspectorLinuxSsmPlugin-do-not-delete" \
--schedule-expression "rate(6 hours)" \
--region your-Region
```

> **Note**
>
> Depending on your use case, if you set the rate for `schedule-expression` from 6 hours to an interval like 30 minutes, you can exceed the daily ssm inventory limit. This causes results to be delayed, and you might encounter Amazon EC2 instances with partial error statuses.

Supported programming languages

For Linux instances, Amazon Inspector deep inspection can produce findings for application programming language packages and operating system packages.

For Mac and Windows instances, Amazon Inspector deep inspection can produce findings only for operating system packages.

For more information about supported programming languages, see Supported programming languages: Amazon EC2 deep inspection.

Scanning Windows EC2 instances with Amazon Inspector

Amazon Inspector automatically discovers all supported Windows instances and includes them in continuous scanning without any extra actions. For information about which instances are supported, see Operating systems and programming languages supported by Amazon Inspector. Amazon Inspector runs Windows scans at regular intervals. Windows instances are scanned at discovery and then every 6 hours. However, you can adjust the default scan interval after the first scan.

When Amazon EC2 scanning is activated, Amazon Inspector creates the following SSM associations for your Windows resources: `InspectorDistributor-do-not-delete`, `InspectorInventoryCollection-do-not-delete`, and `InvokeInspectorSsmPlugin-do-not-delete`. To install the Amazon Inspector SSM plugin on your Windows instances, the `InspectorDistributor-do-not-delete` SSM association uses the `AWS-ConfigureAWSPackage` SSM document and the `AmazonInspector2-InspectorSsmPlugin` SSM Distributor package. For more information, see The Amazon Inspector SSM plugin for Windows. To collect instance data and generate Amazon Inspector findings, the `InvokeInspectorSsmPlugin-do-not-delete` SSM association runs the Amazon Inspector SSM plugin at 6-hour intervals. However, you can customize this setting using a cron or rate expression.

> **Note**
>
> Amazon Inspector stages updated Open Vulnerability and Assessment Language (OVAL) definition files to the S3 bucket `inspector2-oval-prod-`*`your-AWS-Region`*. The Amazon S3 bucket contains OVAL definitions used in scans. These OVAL definitions shouldn't be modified. Otherwise, Amazon Inspector won't scan for new CVEs when they release.

Amazon Inspector scan requirements for Windows instances

To scan a Windows instance, Amazon Inspector requires the instance to meet the following criteria:

- The instance is an SSM managed instance. For instructions about setting up your instance for scanning, see Configuring the SSM Agent.
- The instance operating system is one of the supported Windows operating systems. For a complete list of supported operating systems, see Amazon EC2 instances status values.
- The instance has the Amazon Inspector SSM plugin installed. Amazon Inspector automatically installs the Amazon Inspector SSM plugin for managed instances upon discovery. See the next topic for details about the plugin.

> **Note**
>
> If your host is running in an Amazon VPC without outgoing internet access, Windows scanning requires your host to be able to access Regional Amazon S3 endpoints. To learn how to configure an Amazon S3 Amazon VPC endpoint, see Create a gateway endpoint

in the *Amazon Virtual Private Cloud User Guide*. If your Amazon VPC endpoint policy is restricting access to external S3 buckets, you must specifically allow access to the bucket maintained by Amazon Inspector in your AWS Region that stores the OVAL definitions used to evaluate your instance. This bucket has the following the format: `inspector2-oval-prod-REGION`.

Setting custom schedules for Windows instance scans

You can customize the time between your Windows Amazon EC2 instance scans by setting a cron expression or rate expression for the `InvokeInspectorSsmPlugin-do-not-delete` association using SSM. For more information, see Reference: Cron and rate expressions for Systems Manager in the *AWS Systems Manager User Guide* or use the following instructions.

Select from the following code examples to change the scan cadence for Windows instances from the default 6 hours to 12 hours using either a rate expression or a cron expression.

The following examples require you to use the **AssociationId** for the association named `InvokeInspectorSsmPlugin-do-not-delete`. You can retrieve your **AssociationId** by running the following AWS CLI command:

```
$ aws ssm list-associations --association-filter-list
 "key=AssociationName,value=InvokeInspectorSsmPlugin-do-not-delete" --region us-east-1
```

Note

The **AssociationId** is Regional, so you need to first retrieve a unique ID for each AWS Region. You can then run the command to change the scan cadence in each Region where you want to set a custom scan schedule for Windows instances.

Example rate expression

```
$ aws ssm update-association \
--association-id "YourAssociationId" \
--association-name "InvokeInspectorSsmPlugin-do-not-delete" \
--schedule-expression "rate(12 hours)"
```

Example cron expression

```
$ aws ssm update-association \
--association-id "YourAssociationId" \
--association-name "InvokeInspectorSsmPlugin-do-not-delete" \
--schedule-expression "cron(0 0/12 * * ? *)"
```

Scanning Amazon Elastic Container Registry container images with Amazon Inspector

Amazon Inspector scans container images stored in Amazon Elastic Container Registry for software vulnerabilities to generate package vulnerability findings. When you activate Amazon ECR scanning, you set Amazon Inspector as the preferred scanning service for your private registry.

> **Note**
>
> Amazon ECR uses a registry policy to grant permissions to an AWS principal. This principal has the required permissions to call Amazon Inspector APIs for scanning. When setting the scope of your registry policy, you must not add the `ecr:*` action or `PutRegistryScanningConfiguration` in deny. This results in errors at the registry level when enabling and disabling scanning for Amazon ECR.

With basic scanning, you can configure your repositories to scan on push or perform manual scans. With enhanced scanning, you scan for operating system and programming language packages vulnerabilities at the registry level. For a side-by-side comparison of the differences between basic and enhanced scanning, see the Amazon Inspector FAQ.

> **Note**
>
> Basic scanning is provided and billed through Amazon ECR. For more information, see Amazon Elastic Container Registry pricing. Enhanced scanning is provided and billed through Amazon Inspector. For more information, see Amazon Inspector pricing.

For information about how to activate Amazon ECR scanning, see Activating a scan type. For information about how to view your findings, see Managing findings in Amazon Inspector. For

information about how to view your findings at the image level, see Image scanning in the *Amazon Elastic Container Registry User Guide*. You can also manage findings in AWS services not available for basic scanning, like AWS Security Hub and Amazon EventBridge.

This section provides information about Amazon ECR scanning and describes how to configure enhanced scanning for Amazon ECR repositories.

Scan behaviors for Amazon ECR scanning

When you first activate Amazon ECR scanning, Amazon Inspector detects images pushed within the last 14 days. Amazon Inspector then scans the images and sets the scan statuses to `active`. If continuous scanning is enabled, Amazon Inspector monitors images as long as they were pushed within 14 days (by default), the last-in-use date is within 14 days (by default), or the images are scanned within the configured re-scan duration. For Amazon Inspector accounts that were created prior to May 16th, 2025, the default configuration is for re-scan to monitor images if they were pushed or pulled within the last 90 days. For more information, see Configuring the Amazon ECR re-scan duration.

For continuous scanning, Amazon Inspector initiates new vulnerability scans of container images in the following situations:

- Whenever a new container image is pushed.
- Whenever Amazon Inspector adds a new common vulnerabilities and exposures (CVE) item to its database, and that CVE is relevant to that container image (continuous scanning only).

If you configure your repository for on push scanning, images are only scanned when you push them.

You can check when a container image was last checked for vulnerabilities from the **Container images** tab on the **Account management** page, or by using the ListCoverage API. Amazon Inspector updates the **Last scanned at** field of an Amazon ECR image in response to the following events:

- When Amazon Inspector completes an initial scan of a container image.
- When Amazon Inspector re-scans a container image because a new common vulnerabilities and exposures (CVE) item that impacts that container image was added to the Amazon Inspector database.

Mapping container images to running containers

Amazon Inspector provides comprehensive container security management by mapping container images to running containers across Amazon Elastic Container Service (Amazon ECS) and Amazon Elastic Kubernetes Service (Amazon EKS). These mappings provide insights into vulnerabilities for images on running containers.

> **Note**
>
> The managed policy `AWSReadOnlyAccess` alone does not provide sufficient permissions to view the mapping between Amazon ECR images and running containers. You need both the `AWSReadOnlyAccess` and `AWSInspector2ReadOnlyAccess` managed policies to view container image mapping information.

With this feature, you can prioritize remediation efforts based on operational risks and maintain security coverage across the entire container ecosystem. You can monitor container images currently in use and when container images were last used on an Amazon ECS or Amazon EKS cluster in the past 24 hours. For new images or accounts, it can take up to 36 hours for data to be available. Afterwards, this data is updated once every 24-hours. This information will be available in your findings through the Amazon Inspector console on the details screen for your container image findings and with the Amazon Inspector API through the `ecrImageInUseCount` and `ecrImageLastInUseAt` filters.

> **Note**
>
> This data is automatically sent to Amazon ECR findings when you activate Amazon ECR scanning and configure your repository for continuous scanning. Continuous scanning must be configured at the Amazon ECR repository level. For more information, see Enhanced scanning in the *Amazon Elastic Container Registry User Guide*.

You can also re-scan container images from clusters based on their last-in-use date.

This feature is also supported on Fargate with Amazon ECS and Amazon EKS.

Supported operating systems and media types

For information about supported operating systems, see Supported operating systems: Amazon ECR scanning with Amazon Inspector.

Amazon Inspector scans of Amazon ECR repositories cover the following supported media types:

Image manifest

- `"application/vnd.oci.image.manifest.v1+json"`
- `"application/vnd.docker.distribution.manifest.v2+json"`

Image configuration

- `"application/vnd.docker.container.image.v1+json"`
- `"application/vnd.oci.image.config.v1+json"`

Image layers

- `"application/vnd.docker.image.rootfs.diff.tar"`
- `"application/vnd.docker.image.rootfs.diff.tar.gzip"`
- `"application/vnd.docker.image.rootfs.foreign.diff.tar.gzip"`
- `"application/vnd.oci.image.layer.v1.tar"`
- `"application/vnd.oci.image.layer.v1.tar+gzip"`
- `"application/vnd.oci.image.layer.v1.tar+zstd"`
- `"application/vnd.oci.image.layer.nondistributable.v1.tar"`
- `"application/vnd.oci.image.layer.nondistributable.v1.tar+gzip"`

> **Note**
>
> Amazon Inspector does not support the `"application/vnd.docker.distribution.manifest.list.v2+json"` media type for the scanning of Amazon ECR repositories.

Configuring the Amazon ECR re-scan duration

The Amazon ECR re-scan duration setting determines how long Amazon Inspector continuously monitors container images in repositories. You configure the re-scan duration for the image last-in-use date, last pull date, and push date. As a best practice, configure the re-scan duration to best suit your environment.

If you build images often, choose a shorter scan duration. For images used over long periods of time, choose a longer scan duration. The default scan duration for new accounts, including new accounts added to an organization, is 14 days.

Amazon Inspector will continue to monitor and rescan an image as long as it's been last in use on a cluster or pushed within 14 days (by default). If an image hasn't been pushed or last used on a running container within the configured push and last in use dates, Amazon Inspector stops monitoring it. There is an option to change the setting to monitor images by last pull date instead of the last in use date, if required. When Amazon Inspector stops monitoring an image, it sets the image scan status code to inactive and reason code to expired. Amazon Inspector then schedules all associated image findings to be closed.

If you increase the push date duration, Amazon Inspector applies the change to all actively scanned images in repositories configured for continual scanning. However, inactive images remain inactive, even if you pushed them within the new duration.

> **Note**
>
> When you configure the re-scan duration from a delegated administrator account, Amazon Inspector applies the setting to all member accounts in the organization. If the delegated administrator account does not enable Amazon ECR scanning, it cannot view clusters for an API image.

> **Note**
>
> All re-scan duration settings configured prior to May 16, 2025, will remain the unchanged. You can continue using any default settings previously configured.

Image re-scan duration

The image re-scan duration determines how long Amazon Inspector will monitor images. The image re-scan duration includes two modes: **Last in use date** (default) or **Last pull date**. Choose **Last in use date** (default) if you want to use the last in use date from your Amazon ECS/Amazon EKS cluster activity. Choose **Last pull date** if you want to use the last pull date from your Amazon ECR images to re-scan images. The following options are available as re-scan durations:

- 14 days (default)
- 30 days
- 60 days
- 90 days
- 180 days

Image push date duration

The image push date duration determines how long Amazon Inspector will continuously monitor images after being pushed to repositories. The following options are available as re-scan durations:

- 14 days (default)
- 30 days
- 60 days
- 90 days
- 180 days
- Lifetime

To configure the Amazon ECR re-scan duration

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. Select the AWS Region where you want to configure the Amazon ECR re-scan duration.
3. From the navigation pane, choose **General settings**, and then choose **ECR scanning settings**.
4. Under **ECR re-scan duration**, choose the image re-scan mode, and then choose the corresponding duration.
5. Under **Image push date**, choose the image push date.
6. Choose **Save**.

Scanning AWS Lambda functions with Amazon Inspector

Amazon Inspector support for AWS Lambda functions and layers provides continuous automated security vulnerability assessments. Amazon Inspector offers two types of Lambda function scanning:

Amazon Inspector Lambda standard scanning

This is the default Lambda scan type. Lambda standard scanning scans application dependencies within a Lambda function and layers for package vulnerabilities.

Amazon Inspector Lambda code scanning

This scan type scans the custom application code in your Lambda function and layers for code vulnerabilities. You can either activate Lambda standard scanning or activate Lambda standard scanning with Lambda code scanning..

When you activate Lambda function scanning, Amazon Inspector creates the following AWS CloudTrail service-linked channels in your account: `cloudtrail:CreateServiceLinkedChannel` and `cloudtrail:DeleteServiceLinkedChannel`. Amazon Inspector manages these channels and uses them to monitor your CloudTrail events for scans. These channels allow you to see CloudTrail events in your account as if you had a trail in CloudTrail. We recommend you create your own trail in CloudTrail to manage events for your account.

For information about how to activate Lambda function scanning, see Activating a scan type. This section provides information about Lambda function scanning.

Scan behaviors for Lambda function scanning

Upon activation, Amazon Inspector scans all Lambda functions invoked or updated in the last 90 days in your account. Amazon Inspector initiates vulnerability scans of Lambda functions in the following situations:

- As soon as Amazon Inspector discovers an existing Lambda function.
- When you deploy a new Lambda function to the Lambda service.
- When you deploy an update to the application code or dependencies of an existing Lambda function or its layers.

- Whenever Amazon Inspector adds a new common vulnerabilities and exposures (CVE) item to its database, and that CVE is relevant to your function.

Amazon Inspector monitors each Lambda function throughout its lifetime until it's either deleted or excluded from scanning.

You can check when a Lambda function was last checked for vulnerabilities from the **Lambda functions** tab on the **Account management** page, or by using the ListCoverage API. Amazon Inspector updates the **Last scanned at** field for a Lambda function in response to the following events:

- When Amazon Inspector completes an initial scan of a Lambda function.
- When a Lambda function is updated.
- When Amazon Inspector re-scans a Lambda function because a new CVE item impacting that function was added to the Amazon Inspector database.

Supported runtimes and eligible functions

Amazon Inspector supports different runtimes for Lambda standard scanning and Lambda code scanning. For a list of supported runtimes for each scan type, see Supported runtimes: Amazon Inspector Lambda standard scanning and Supported runtimes: Amazon Inspector Lambda code scanning.

In addition to having a supported runtime, a Lambda function needs to meet the following criteria to be eligible for Amazon Inspector scans:

- The function has been invoked or updated in the last 90 days.
- The function is marked `$LATEST`.
- The function isn't excluded from scans by tags.

> **Note**
>
> Lambda functions that haven't been invoked or modified in the last 90 days are automatically excluded from scans. Amazon Inspector will resume scanning an automatically excluded function if it is invoked again or if changes are made to the Lambda function code.

Amazon Inspector Lambda standard scanning

Amazon Inspector Lambda standard scanning identifies software vulnerabilities in the application package dependencies you add to your Lambda function code and layers. For example, if your Lambda function uses a version of the `python-jwt` package with a known vulnerability, Lambda standard scanning will generate a finding for that function.

If Amazon Inspector detects a vulnerability in your Lambda function application package dependencies, Amazon Inspector produces a detailed **Package Vulnerability** type finding.

For instructions on activating a scan type see Activating a scan type.

> **Note**
>
> Lambda standard scanning doesn't scan the AWS SDK dependency installed by default in the Lambda runtime environment. Amazon Inspector only scans dependencies uploaded with the function code or inherited from a layer.

> **Note**
>
> Deactivating Amazon Inspector Lambda standard scanning will also deactivate Amazon Inspector Lambda code scanning.

Excluding functions from Lambda standard scanning

You can add tags to Lambda functions, so you can exclude them from Amazon Inspector Lambda standard scans. Excluding functions from scans can prevent unactionable alerts. When you tag a function for exclusion, the tag must have the following key-value pair.

- Key:`InspectorExclusion`
- Value:`LambdaStandardScanning`

This topic describes how to tag a function for exclusion from scans. For more information about adding tags in Lambda, see Using tags on Lambda functions.

To exclude a function from scans

1. Sign in using your credentials, and then open the Lambda console at https://console.aws.amazon.com/lambda/.
2. From the navigation pane, choose **Functions**.
3. Choose the name of the function you would want to exclude from Amazon Inspector Lambda standard scans.
4. Choose **Configuration**, and then choose **Tags**.
5. Choose **Manage tags**, and then **Add new tag**.
   a. For **Key**, enter `InspectorExclusion`.
   b. For **Value**, enter `LambdaStandardScanning`
6. Choose **Save**.

Amazon Inspector Lambda code scanning

> **Important**
>
> This feature captures snippets of Lambda functions to highlight detected vulnerabilities. These snippets can show hardcoded credentials and other sensitive materials.

With this feature, Amazon Inspector scans application code in a Lambda function for code vulnerabilities based on AWS security best practices to detect data leaks, injection flaws, missing encryption, and weak cryptography. Amazon Inspector uses automated reasoning and machine learning to evaluate your Lambda function application code. It also uses internal detectors that are developed in collaboration with Amazon CodeGuru to identify policy violations and vulnerabilities. For more information, see the CodeGuru Detector Library.

Amazon Inspector generates a code vulnerability when it detects a vulnerability in your Lambda function application code. This finding type includes a code snippet showing the issue and where you can find the issue in your code. It also suggests how to remediate the issue. The suggestion includes plug-and-play code blocks that you can use to replace vulnerable lines of code. These code fixes are provided in addition to general code remediation guidance for this finding type.

Code remediation suggestions are powered by automated reasoning and generative artificial intelligence services. Some code remediation suggestions might not work as intended. You are

responsible for the code remediation suggestions you adopt. Always review code remediation suggestions before adopting them. You might need to edit them to make sure your code performs as intended. For more information, see the Responsible AI Policy.

Lambda code scanning can be activated by itself or together with Lambda standard scanning. For more information, see Activating a scan type. For information about which AWS Regions support this feature, see Region-specific feature availability.

Encrypting your code in code vulnerability findings

CodeGuru stores code snippets that are detected to be in connection with a code vulnerability finding using Lambda code scanning. By default, CodeGuru controls the AWS owned key used to encrypt your code. However, you can use your own customer managed key for encryption through the Amazon Inspector API. For more information, see Encryption at rest for code in your findings

Excluding functions from Lambda code scanning

You can add tags to Lambda functions, so you can exclude them from Amazon Inspector Lambda code scans. Excluding functions from scans can prevent unactionable alerts. When you tag a function for exclusion, the tag must have the following key-value pair.

- Key – `InspectorCodeExclusion`
- Value – `LambdaCodeScanning`

This topic describes how to tag a function for exclusion from code scans. For more information about adding tags in Lambda, see Using tags on Lambda functions.

To exclude a function from code scans

1. Sign in using your credentials, and then open the Lambda console at https://console.aws.amazon.com/lambda/.
2. From the navigation pane, choose **Functions**.
3. Choose the name of the function you would want to exclude from Amazon Inspector Lambda code scans.
4. Choose **Configuration**, and then choose **Tags**.
5. Choose **Manage tags**, and then **Add new tag**.

    a. For **Key**, enter `InspectorCodeExclusion`.

b. For **Value**, enter `LambdaCodeScanning`

6. Choose **Save**.

Deactivating a scan type in Amazon Inspector

When you deactivate a scan type, you lose access to any findings the scan type produced. If you reactivate the scan type, Amazon Inspector scans all eligible resources to generate new findings. If you want to keep a record of your findings, you can export them to an Amazon Simple Storage Service (Amazon S3) bucket as a findings report. For more information, see Exporting Amazon Inspector findings reports. When you deactivate a scan type, you might encounter the following changes in the AWS account where you deactivated the scan type:

Amazon EC2 scanning

When you deactivate Amazon Inspector Amazon EC2 scanning for an account, the following SSM associations are deleted:

- `InspectorDistributor-do-not-delete`
- `InspectorInventoryCollection-do-not-delete`
- `InspectorLinuxDistributor-do-not-delete`
- `InvokeInspectorLinuxSsmPlugin-do-not-delete`
- `InvokeInspectorSsmPlugin-do-not-delete`.

Additionally, the Amazon Inspector SSM plugin is removed from all Windows hosts. For more information, see Scanning Windows EC2 instance.

Amazon ECR scanning

When you deactivate Amazon ECR scanning for an account, the Amazon ECR scan type account changes from **Enhanced scanning** with Amazon Inspector to **Basic scanning** with Amazon ECR.

Lambda standard scanning

When you deactivate Lambda standard scanning for an account, you deactivate Lambda code scanning if the scan type was actived. You also delete the CloudTrail service-linked channel that Amazon Inspector create when you activate Lambda standard scanning.

Amazon Inspector Code Security

When you deactivate Code Security for your account, you delete all integrations, projects, and scan configurations associated with it. If your account is the delegated administrator for an organization, you only deactivate Code Security for your account, and memeber accounts become standalone accounts.

Deactivating scans

Deactivating all scan types for an account deactivates Amazon Inspector for that account in that AWS Region. For more information, see Deactivating Amazon Inspector.

To complete this procedure for a multi-account environment, follow these steps while signed in as the Amazon Inspector delegated administrator.

Console

To deactivate scans

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. By using the AWS Region selector in the upper-right corner of the page, select the Region where you want to deactivate scans.
3. In the navigation pane, choose **Account management**.
4. Choose the **Accounts** tab to show the scanning status of an account.
5. Select the check box of each account for which you want to deactivate scans.
6. Choose **Actions**, and, from the **Deactivate** options, select the scan type you wish to deactivate.
7. (Recommended) Repeat these steps in each AWS Region for which you want to deactivate that scan type.

API

Run the Disable API operation. In the request, provide the account IDs you are deactivating scans for, and for `resourceTypes` provide one or more of `EC2`, `ECR`, `LAMBDA`, or `LAMBDA_CODE` to deactivate scans.

Center for Internet Security (CIS) scans for Amazon EC2 instance operating systems

Amazon Inspector CIS scans (CIS scans) benchmark your Amazon EC2 instance operating systems to make sure you configured them according to best practice recommendations established by the Center for Internet Security. CIS Security Benchmarks provides industry standard configuration baselines and best practices for configuring a system securely. You can perform or schedule CIS scans after you enable Amazon Inspector EC2 scanning for an account. For information about how to activate Amazon EC2 scanning, see Activating a scan type.

> **Note**
>
> CIS standards are intended for x86_64 operating systems. Some checks may not be evaluated or return invalid remediation instructions on ARM-based resources.

Amazon Inspector performs CIS scans on target Amazon EC2 instances based on instance tags and your defined scanning schedule. Amazon Inspector performs a series of instance checks on each targeted instance. Each check evaluates whether your system configuration meets specific CIS Benchmark recommendations. Each check has a CIS check ID and title, which correspond with a CIS Benchmark recommendation for that platform. When a CIS scan completes, you can view the results to see which instance checks passed, skipped, or failed for that system.

> **Note**
>
> To perform or schedule CIS scans, you must have a secure internet connection. However, if you want to run CIS scans on private instances, you must use a VPC endpoint.

Topics

- Viewing CIS scan results
- Editing a CIS scan configuration
- Downloading a CIS scan results

Amazon EC2 instance requirements for Amazon Inspector CIS scans

To run a CIS scan on your Amazon EC2 instance, the Amazon EC2 instance must meet the following criteria:

- The instance operating system is one of the supported operating systems for CIS scans. For more information, see Operating systems and programming languages supported by Amazon Inspector.
- The instance is an Amazon EC2 Systems Manager instance. For more information, see Working with the SSM Agent in the *AWS Systems Manager User Guide*.
- The Amazon Inspector SSM plugin is installed on the instance. Amazon Inspector automatically installs this plugin on manged instances.
- The instance has an instance profile that grants permissions for SSM to manage the instance and Amazon Inspector to run CIS scans for that instance. To grant these permissions, attach the AmazonSSMManagedInstanceCore and AmazonInspector2ManagedCisPolicy policies to an IAM role. Then attach the IAM role to your instance as an instance profile. For instructions on creating and attaching an instance profile, see Work with IAM roles in the *Amazon EC2 User Guide*.

> **Note**
>
> You're not required to enable Amazon Inspector deep inspection before running a CIS scan on your Amazon EC2 instance. If you disable Amazon Inspector deep inspection, Amazon Inspector automatically installs the SSM Agent, but the SSM Agent won't be invoked to run deep inspection anymore. However, as a result, the `InspectorLinuxDistributor-do-not-delete` association is present in your account.

Amazon Virtual Private Cloud endpoint requirements for running CIS scans on private Amazon EC2 instances

You can run CIS scans on Amazon EC2 instances over an Amazon network. However, if you want to run CIS scans on private Amazon EC2 instances, you must create Amazon VPC endpoints. The following endpoints are required when you create Amazon VPC endpoints for Systems Manager:

- `com.amazonaws.region.ec2messages`
- `com.amazonaws.region.inspector2`
- `com.amazonaws.region.s3`
- `com.amazonaws.region.ssm`
- `com.amazonaws.region.ssmmessages`

For more information, see Creating Amazon VPC endpoints for Systems Manager in the *AWS Systems Manager User Guide*.

> **Note**
>
> Currently, some AWS Regions don't support the `amazonaws.com.region.inspector2` endpoint.

Running CIS scans

You can either run a CIS scan once on-demand or as a scheduled recurring scan. To run a scan, you first create a scan configuration.

When you create a scan configuration, you specify tag key-value pairs to use to target instances. If you are the Amazon Inspector delegated administrator for an organization, you can specify multiple accounts in the scan configuration, and Amazon Inspector will look for instances with the specified tags in each of those accounts. You choose the CIS Benchmark level for the scan. For each benchmark, CIS supports a level 1 and level 2 profile designed to provide baselines for different levels of security that different environments may require.

- **Level 1** – recommends essential basic security settings that can be configured on any system. Implementing these settings should cause little or no interruption of service. The goal of these

recommendations is to reduce the number of entry points into your systems, reducing your overall cybersecurity risks.

- **Level 2** – recommends more advanced security settings for high-security environments. Implementing these settings requires planning and coordination to minimize the risk of business impact. The goal of these recommendations is to help you achieve regulatory compliance.

Level 2 extends level 1. When you choose Level 2, Amazon Inspector checks for all configurations recommended for level 1 and level 2.

After defining the parameters for your scan, you can choose whether to run it as a one time scan, which runs after you complete the configuration, or a recurring scan. Recurring scans can run daily, weekly, or monthly, at a time of your choice.

> **Tip**
>
> We recommend choosing a day and time that's least likely to impact your system while the scan is running.

Considerations for managing Amazon Inspector CIS scans with AWS Organizations

When you run CIS scans in an organization, Amazon Inspector delegated administrators and member accounts interact with CIS scan configurations and scan results differently.

How Amazon Inspector delegated administrators can interact with CIS scan configurations and scan results

When the delegated administrator creates a scan configuration, either for all accounts or a specific member accounts, the organization owns the configuration. Scan configurations that an organization owns have an ARN specifying the organization ID as the owner:

`arn:aws:inspector2:`*`Region`*`:`*`111122223333`*`:owner/`*`OrganizationId`*`/cis-configuration/`*`scanId`*

The delegated administrator can manage scan configurations that an organization owns, even if another account created them.

The delegated administrator can view scan results for any account in its organization.

If the delegated administrator creates a scan configuration and specifies SELF as the target account, the delegated administrator owns scan configuration, even if they leave the organization. However, the delegated administrator cannot change the target of a scan configuration with SELF as the target.

> **Note**
>
> The delegated adminstrator cannot add tags to CIS scan configurations the organization owns.

How Amazon Inspector member accounts can interact with CIS scan configurations and scan results

When a member account creates a CIS scan configuration, it owns the configuration. However, the delegated administrator can view the configuration. If a member account leaves the organization, the delegated administrator won't be able to view the configuration.

> **Note**
>
> The delegated administrator cannot edit a scan configuration the member account creates.

Member accounts, delegated administrators with SELF as the target, and standalone accounts all own scan configurations they create. These scan configurations have an ARN that shows the account ID as the owner:

`arn:aws:inspector2:`*`Region`*`:`*`111122223333`*`:owner/`*`111122223333`*`/cis-configuration/`*`scanId`*

A member account can view scan results in their account, including scan results from CIS scans the delegated administrator scheduled.

Amazon Inspector owned Amazon S3 buckets used for Amazon Inspector CIS scans

Open Vulnerability and Assessment Language (OVAL) is an information security effort that standardizes how to assess and report the machine state of computer systems. The following table lists all of the Amazon Inspector owned Amazon S3 buckets with OVAL defintions that are used

for CIS scans. Amazon Inspector stages OVAL definition files that are required for CIS scans. The Amazon Inspector owned Amazon S3 buckets should be allowlisted in VPCs if necessary.

> **Note**
>
> The details for each of the following Amazon Inspector owned Amazon S3 buckets aren't subject to change. However, the table might be updated to reflect newly supported AWS Regions. You can't use Amazon Inspector ownerd Amazon S3 buckets for other Amazon S3 operations or in your own Amazon S3 buckets.

CIS bucket	AWS Region
`cis-datasets-prod-arn-5908f6f`	Europe (Stockholm)
`cis-datasets-prod-bah-8f88801`	Middle East (Bahrain)
`cis-datasets-prod-bjs-0f40506`	China (Beijing)
`cis-datasets-prod-bom-435a167`	Asia Pacific (Mumbai)
`cis-datasets-prod-cdg-f3a9c58`	Europe (Paris)
`cis-datasets-prod-cgk-09eb12f`	Asia Pacific (Jakarta)
`cis-datasets-prod-cmh-63030b9`	US East (Ohio)
`cis-datasets-prod-cpt-02c5c6f`	Africa (Cape Town)
`cis-datasets-prod-dub-984936f`	Europe (Ireland)
`cis-datasets-prod-fra-6eb96eb`	Europe (Frankfurt)
`cis-datasets-prod-gru-de69f99`	South America (São Paulo)
`cis-datasets-prod-hkg-8e30800`	Asia Pacific (Hong Kong)
`cis-datasets-prod-iad-8438411`	US East (N. Virginia)
`cis-datasets-prod-icn-f4eff1c`	Asia Pacific (Seoul)

CIS bucket	AWS Region
cis-datasets-prod-kix-5743b21	Asia Pacific (Osaka)
cis-datasets-prod-lhr-8b1fbd0	Europe (London)
cis-datasets-prod-mxp-7b1bbce	Europe (Milan)
cis-datasets-prod-nrt-464f684	Asia Pacific (Tokyo)
cis-datasets-prod-osu-5bead6f	AWS GovCloud (US-East)
cis-datasets-prod-pdt-adadf9c	AWS GovCloud (US-West)
cis-datasets-prod-pdx-acfb052	US West (Oregon)
cis-datasets-prod-sfo-1515ba8	US West (N. California)
cis-datasets-prod-sin-309725b	Asia Pacific (Singapore)
cis-datasets-prod-syd-f349107	Asia Pacific (Sydney)
cis-datasets-prod-yul-5e0c95e	Canada (Central)
cis-datasets-prod-zhy-5a8eacb	China (Ningxia)
cis-datasets-prod-zrh-67e0e3d	Europe (Zurich)

Creating a CIS scan configuration

This topic describes how to create a CIS scan configuration.

To run a CIS scan

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. Use the AWS Region dropdown to select the AWS Region where you want to run a CIS scan.
3. From the navigation pane, choose **On-demand scans**, and then choose **CIS scans**.
4. Choose **Create new scan**.

5. For **Scan configuration name**, enter a **Scan configuration name**.
6. For **Target resource tags**, enter a **Key** and corresponding **Value** for the instances you want to scan. You can specify up to five different values for each key and a total of 25 tags to include in the scan.
7. For **CIS Benchmark level**, you can select **Level 1** for basic security configurations or **Level 2** for advanced security configurations.
8. For **Target accounts**, specify which accounts to include in the CIS scan. For more information, see Considerations for managing Amazon Inspector CIS scans with AWS Organizations.

   If your account is the delegated administrator account, you can select **All accounts** or **Specify accounts**. The **All accounts** option targets all accounts in your organization. The **Specify accounts** only targets individual accounts in your organization. If you choose this option, you can specify more than one account by separating the account numbers with a comma. You can also enter SELF instead of an account ID to create a scan configuration for your account

   If your account is a standalone account or member account in an organization, you can select **Self** to create a scan configuration for your account.
9. For **Schedule**, choose **One time scan**, which runs as soon as you finish creating your scan configuration, or **Recurring scans**, which runs at the time you specify.
10. Confirm your choices, and then choose **Create**.

Viewing CIS scan results

Amazon Inspector creates a scan job for every scan configuration that runs and collects results of a scan with a unique scan ID. CIS scan results are available for 90 days. You can view CIS scan results by its checks or scanned resources:

- **Scan results aggregated by checks** – Groups the results of a scan by each individual check performed during the scan. For each check, you get a report of how many resources failed, skipped, or passed.
- **Scan results aggregated by scanned resources** – Groups the results of a scan by each scanned resource the scan targets during the scan. For each resource, you get a report of how many checks that a resource failed, skipped, or passed.

This topic describes how to view results for a CIS scan.

To view scan results

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. Use the AWS Region dropdown to select the AWS Region where you created your CIS scan configuration.
3. From the navigation pane, choose **On-demand scans**, and then choose **CIS scans**.
4. Choose the **Scan results** tab.
5. Under the **Scheduled by** column, choose the scan schedule ID you want to view. Or select the row with the scan schedule ID you want to view, and then choose **View details**.
6. Choose **Checks** to view each check that was performed performed or **Scanned resources** to view each scanned resource that was targeted during the scan.

You can also view details for scheduled CIS scans.

To view details for scheduled CIS scans

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. Use the AWS Region dropdown to select the AWS Region where you created your CIS scan configuration.
3. From the navigation pane, choose **On-demand scans**, and then choose **CIS scans**.
4. Choose the **Scheduled** tab.
5. Under the **Scan configuration name** column, choose the name of the scan configuration you want to view. Or select the row with the scan configuration you want to view, and then choose **View details**.

Editing a CIS scan configuration

This topic describes how to edit a CIS scan configuration.

To edit a CIS scan configuration

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.

2. Use the AWS Region dropdown to select the AWS Region where you created your CIS scan configuration.
3. From the navigation pane, choose **On-demand scans**, and then choose **CIS scans**.
4. Choose the **Scheduled** tab.
5. Select the row with the scan configuration you want to edit, and then choose **Edit**.

Downloading a CIS scan results

You can download a PDF or CSV of a CIS scan using the Amazon Inspector console or API.

> **Note**
>
> You can only download a CSV file of your CIS scan results for CIS scans collected after 05/03/2024.

This topic describes how to download a CIS scan using the Amazon Inspector console.

To download CIS scan results from the console

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. Use the AWS Region dropdown to select the AWS Region where you created your CIS scan configuration.
3. From the navigation pane, choose **On-demand scans**, and then choose **CIS scans**.
4. Choose the **Scan results** tab.
5. Under the **Scheduled By** column, choose the scan schedule ID that you want to view. Or select the row with the scan schedule ID that you want to view, and then choose **View details**.
6. Choose **Download**, and then choose **PDF** or **CSV**. If your account is the delegated administrator account, you can choose **Select account** to download results for a specific member account.

Amazon Inspector Code Security

Amazon Inspector is a vulnerability management service that automatically discovers workloads and continually scans them for software vulnerabilities and unintended network exposure. With Code Security, Amazon Inspector scans first-party application source code, third-party application dependencies, and Infrastructure as Code for vulnerabilities. You can activate Code Security in the Amazon Inspector console or with the Amazon Inspector API. Once you activate Code Security, you can create and apply a scan configuration to your code repository to determine how often and when it will be scanned. You can view, edit, and delete your scan configuration at any time. For information about the AWS Regions where Code Security is available, see Regions and endpoints. For information about pricing, see Amazon Inspector pricing.

> **Note**
>
> Security findings generated by Amazon Inspector Code Security are not available for the Amazon Inspector integration with Security Hub. However, you can access these particular findings in the Amazon Inspector console and through the Amazon Inspector API.

Prerequisites for Code Security

Before you can begin using Code Security, you must activate Code Security and decide how to encrypt your data. This can be information like integration credentials, code, or any other information related to your integrations, code repositories, and projects. By default, your data is encrypted with an AWS owned key. This means the key is created, owned, and managed by the service. If you want to own and manage the key used to encrypt your data, you can create a customer managed KMS key.

Activating Code Security

You activate Code Security in the same way that you activate all automated scan types. For more information, see Activating a scan type.

Creating a customer managed key to access AWS KMS

By default, your data is encrypted with an AWS owned key. This means the key is created, owned, and managed by the service. If you want to own and manage the key used to encrypt your data, you can create a customer managed KMS key. Amazon Inspector doesn't interact with your data.

Amazon Inspector only ingests metadata from repositories in your source code provider. For information about how to create a customer managed KMS key, see Create a KMS key in the *AWS Key Management Service User Guide*.

Sample policy

When you create your customer managed key, use the following sample policy.

JSON

```
{
    "Version": "2012-10-17",
    "Id": "key-policy",
    "Statement": [
        {
            "Sid": "Allow Q to use Encrypt Decrypt GenerateDataKey and
 GenerateDataKeyWithoutPlaintext",
            "Effect": "Allow",
            "Principal": {
                "Service": "q.amazonaws.com"
            },
            "Action": [
                "kms:Encrypt",
                "kms:Decrypt",
                "kms:GenerateDataKey",
                "kms:GenerateDataKeyWithoutPlaintext"
            ],
            "Resource": "*",
            "Condition": {
                "StringEquals": {
                    "aws:SourceAccount": "111122223333"
                },
                "StringLike": {
                    "kms:EncryptionContext:aws:qdeveloper:codesecurity-scope":
 "111122223333"
                },
                "ArnLike": {
                    "aws:SourceArn": "arn:aws:inspector2:us-
east-1:111122223333:codesecurity-integration/*"
                }
            }
        },
        {
```

```
            "Sid": "Allow Q to use DescribeKey",
            "Effect": "Allow",
            "Principal": {
                "Service": "q.amazonaws.com"
            },
            "Action": "kms:DescribeKey",
            "Resource": "*"
        },
        {
            "Sid": "Allow Inspector to use Encrypt Decrypt GenerateDataKey and
GenerateDataKeyWithoutPlaintext using FAS",
            "Effect": "Allow",
            "Principal": {
                "AWS": "arn:aws:iam::{111122223333}:role/inspectorCodeSecurity"
            },
            "Action": [
                "kms:Encrypt",
                "kms:Decrypt",
                "kms:GenerateDataKey",
                "kms:GenerateDataKeyWithoutPlaintext"
            ],
            "Resource": "*",
            "Condition": {
                "StringEquals": {
                    "kms:ViaService": "inspector2.us-east-1.amazonaws.com"
                },
                "StringLike": {
                    "kms:EncryptionContext:aws:qdeveloper:codesecurity-scope":
"111122223333"
                }
            }
        },
        {
            "Sid": "Allow Inspector to use DescribeKey using FAS",
            "Effect": "Allow",
            "Principal": {
                "AWS": "arn:aws:iam::{111122223333}:role/inspectorCodeSecurity"
            },
            "Action": [
                "kms:DescribeKey"
            ],
            "Resource": "*",
            "Condition": {
                "StringEquals": {
```

```
                    "kms:ViaService": "inspector2.us-east-1.amazonaws.com"
                }
            }
        }
    ]
}
```

After you create your KMS key, you can use the following Amazon Inspector APIs.

- UpdateEncryptionKey – Use with `CODE_REPOSITORY` for `resourceType` and `CODE` as the scan type to configure the use of your customer managed KMS key.
- GetEncryptionKey – Use with `CODE_REPOSITORY` for `resourceType` and `CODE` as the scan type to configure the retrieval of your KMS key configuration.
- ResetEncryptionKey – Use with `CODE_REPOSITORY` for `resourceType` and `CODE` to reset your KMS key configuration and to use an AWS owned KMS key.

Creating an integration between Amazon Inspector your code repository

This section includes topics that describe how to create an integration between Amazon Inspector and your code repository. When you create an integration, all code repositories are listed as projects in the Amazon Inspector console on the **Code Security** page. Other topics in this section describe how to access your integrations and projects.

Code Security only imports up to 100,000 projects, and only the default branch for each repository is monitored. A project can be associated with a maximum of three default scan configurations.

Code Security only supports a maximum of 100 integrations per account. Code Security integrations have no concept of the delegated administrator account/member account relationship.

To avoid encountering restrictions, we recommend not using the same host for an integration more than once.

Integrations with GitHub SaaS, GitHub Enterprise Cloud, and GitHub Enterprise Server require public internet access.

Important

Third-party integrations might be temporarily or permanently disabled without prior notice for any reason, such as to address security concerns.

Creating an integration between Amazon Inspector and GitHub

This topic describes how to create an integration between Amazon Inspector and GitHub.

Note

If this is your first time creating an integration, you're prompted to create a default scan configuration on Step 2. When you create a scan configuration, you choose the scan frequency, scan analysis, and repositories to be scanned. Creating a default scan configuration is the same as creating a general scan configuration. However, the default scan configuration is automatically associated with any new and existing projects imported into Amazon Inspector. If you want to create a default scan configuration, choose **Continue with this configuration**. You can only create a default scan configuration once. If you create a default scan configuration, you won't be prompted to create a default scan configuration again. You can only create a default scan configuration once per account and once per organization. If you don't want to configure a default scan configuration, choose **Skip configuration**. However, will be prompted to create a default scan configuration the next time you create an integration. After you create a default scan configuration or skip creating a default scan configuration, you're directed to Step 3 of the integration workflow where you enter your integration details.

Integrations with GitHub SaaS, GitHub Enterprise Cloud, and GitHub Enterprise Server require public internet access.

Note

Amazon Inspector only scans and monitors your default branch. If you create a new default branch, Amazon Inspector scans and updates the new default branch.

> **Important**
>
> Before you finish creating the integration, you're directed to authorize the connection between Amazon Inspector and GitHub. You must complete this step to finish the procedure. If you close the pop-up, you will not be able to proceed.

To create an integration between Amazon Inspector and GitHub

1. Sign in using your credentials. Open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. From the navigation pane, choose **Code Security**. Choose **Connect to**, and choose GitHub.
3. Under **Integration details**, enter the name of your integration, and choose **Connect to GitHub**.
4. Choose **Authorize** in the pop-up to create a connection between Amazon Inspector and GitHub.
5. In the success banner, choose **Go to GitHub connection creation page**.
6. Enter the installation ID for the GitHub application. If you installed the GitHub application, you can find the installation ID in GitHub from the **GitHub Apps** page or at the end of the GitHub application URL. If you haven't installed the GitHub application, choose **Install a new app**. This directs you to GitHub where you select the GitHub organization and specify the repository scope.
7. Choose **Connect to GitHub**.

After you create the integration, you can encounter a scenario where Amazon Inspector is unable to refresh the access token. This can occur if the integration host is unavailable or Amazon Inspector experiences other communication issues. To remediate the issue, you can re-authenticate the connection from the **Integrations** tab on the **Code Security** page. Under the **Status** column, the integration shows as **Inactive**, and Amazon Inspector provides the option to re-authenticate. Choose **Re-authenticate**. You're redirected to the integration workflow where you can complete the connection setup.

If you delete system settings for your integration, you can lose connection indefinitely. If this occurs, you must delete the integration and create a new integration. When you delete an integration, you lose all projects and scan configurations associated with the integration.

Creating an integration between Amazon Inspector and GitLab Self Managed

This topic describes how to create an integration between Amazon Inspector and your code repository in GitLab Self Managed.

Required information

The following is required when you create a connection:

- Integration name – This is the name added to the body of your integration.
- Endpoint URL – This is the URL used to access your GitLab Self Managed instance.
- Personal access token – The personal access token is created in GitLab Self Managed from an administrator account and must include the following scopes: `api`, `read_api`, `read_repository`, and `write_repository`.

> **Note**
>
> Amazon Inspector only scans and monitors your default branch. If you create a new default branch, Amazon Inspector scans and updates the new default branch.

Creating an integration between Amazon Inspector and GitLab Self Managed

The following procedure describes how to create a connection between Amazon Inspector and your code repository in GitLab Self Managed.

> **Note**
>
> If this is your first time creating an integration, you're prompted to create a default scan configuration on Step 2. When you create a scan configuration, you choose the scan frequency, scan analysis, and repositories to be scanned. Creating a default scan configuration is the same as creating a general scan configuration. However, the default scan configuration is automatically associated with any new and existing projects imported into Amazon Inspector. If you want to create a default scan configuration, choose **Continue with this configuration**. You can only create a default scan configuration once. If you create a default scan configuration, you won't be prompted to create a default scan configuration again. You can only create a default scan configuration once per account and

once per organization. If you don't want to configure a default scan configuration, choose **Skip configuration**. However, you will be prompted to create a default scan configuration the next time you create an integration. After you create a default scan configuration or skip creating a default scan configuration, you're directed to Step 3 of the integration workflow where you enter your integration details.

Important

Before you finish creating the integration, you're prompted to authorize the connection between Amazon Inspector and GitLab Self Managed. You must complete this step to finish the procedure. If you close the pop-up, you will not be able to proceed.

To create a connection with GitLab Self Managed

1. Sign in using your credentials. Open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. From the navigation pane, choose **Code Security**. Choose **Connect to** and choose **GitLab Self Managed**.
3. Under **Integration details**, enter the following:
   a. For **Integration name**, enter the name added to the body of your integration.
   b. For **Endpoint URL**, enter the URL used to access your GitLab self-managed instance.
   c. For **Personal access token**, enter your personal access token with the required scopes.
4. Choose connect to GitLab.
5. Choose **Authorize** in the pop-up window to finish creating a connection between Amazon Inspector and GitLab.

After you create the integration, you can encounter a scenario where Amazon Inspector is unable to refresh the access token. This can occur if the integration host is unavailable or Amazon Inspector experiences other communication issues. To remediate the issue, you can re-authenticate the connection from the **Integrations** tab on the **Code Security** page. Under the **Status** column, the integration shows as **Inactive**, and Amazon Inspector provides the option to re-authenticate. Choose **Re-authenticate**. You're redirected to the integration workflow where you can complete the connection setup.

If you delete system settings for your integration, you can lose connection indefinitely. If this occurs, you must delete the integration and create a new integration. When you delete an integration, you lose all projects and scan configurations associated with the integration.

Viewing integrations with code repositories

This topic describes how to view integrations in the Amazon Inspector console.

To view integrations in the Amazon Inspector console

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. From the navigation pane, choose **Code Security**.
3. Choose **Integrations**. From this tab, you can review all of your configured integrations and review basic information about all of your integrations. This information includes the name of the integration, status of the integration, and source code provider name.

Re-authenticate to provider

After you create the integration, you can encounter a scenario where Amazon Inspector is unable to refresh the access token. This can occur if the integration host is unavailable or Amazon Inspector experiences other communication issues. To remediate the issue, you can re-authenticate the connection from the **Integrations** tab on the **Code Security** page. Under the **Status** column, the integration shows as **Inactive**, and Amazon Inspector provides the option to re-authenticate. Choose **Re-authenticate**. You're redirected to the integration workflow where you can complete the connection setup.

If you delete system settings for your integration, you can lose connection indefinitely. If this occurs, you must delete the integration and create a new integration. When you delete an integration, you lose all projects and scan configurations associated with the integration.

Viewing code repositories

The topic describes how to view code repositories in the Amazon Inspector console.

To view code repositories in the Amazon Inspector console

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.

2. From the navigation pane, choose **Code Security**.
3. Choose **Code repositories**. From this tab, you can review all of your code repositories, which are listed as projects, and review basic information about them. This information includes the name and scan status for each project. You can also review the configurations associated with your projects and when your projects were last scanned. You can even filter your projects in the search bar.

Viewing details for a project

This topic describes how to view details for a project in the Amazon Inspector console. If your account is the delegated administrator for an organization, you can view details for projects that belong to member accounts.

To view code projects in the Amazon Inspector console

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. From the navigation pane, choose **Code Security**.
3. Choose **Code repositories**. From this tab, you can review all of your code repositories, which are listed as projects, and review basic information about them. This information includes the name and scan status for each project. You can also review the configurations associated with your projects and when your projects were last scanned. You can even filter your projects in the search bar.
4. Choose a project. Or select a project, and choose **View details**. From the **Project details** screen, you can review basic information about the project. This information includes the name and ID for the project, as well as the integration ARN. It includes information about when the project was scanned and the provide type. You can even review findings associated with the project, as well as export findings and create suppression rules for findings.

Deleting an integration

The following procedure describes how to delete an integration in the Amazon Inspector console. When you delete an integration, you lose all projects and scan configurations associated with the integration.

To delete an integration in the Amazon Inspector console.

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. From the navigation pane, choose **Code Security**.
3. Choose **Integrations**. From this tab, you can review all of your configured integrations and review basic information about all of your integrations. This information includes the name of the integration, status of the integration, and integration provider type.
4. Select an integration, and choose **Delete**.

Creating a scan configuration

Before you create a scan configuration, you must create an integration with Amazon Inspector. The first time you create an integration, you're prompted to create a default scan configuration. This topic describes how to create a general scan configuration. The difference between a default scan configuration and a general scan configuration is that a default scan configuration is automatically attached to new projects. You can skip creating a default scan configuration.

Code Security only supports a maximum of 500 general scan configurations. Code security only supports 1 default scan configuration per account and per organization. A scan configuration only can be associated with a maximum of 100,000 projects.

A project can be associated with a maximum of 4 scan configurations total. This includes a default scan configuration if a default scan configuration was created. Scan configurations for an organization cannot be tagged.

If the delegated administrator for an organization creates a scan configuration, the scan configuration is created at the organization level and applied to all member accounts in the organization. The same occurs if the delegated administrator creates a default scan configuration.

When you create a scan configuration, you choose the scan frequency, scan analysis, and repositories to be scanned. The scan frequency can be change based and periodic or customized. Change-based and periodic scanning gives you the option to enable periodic scanning. If you enable periodic scanning, you set the scan frequency to the day of the week or month when a scan occurs. Customized scanning gives you the option to enable scanning when code is changed and periodic scanning. If you enable scanning when code is changed, you specify the scan trigger to include in merge and pull requests.

Scans can be skipped if a commit ID hasn't changed in a set amount of time. For periodic scanning, scans are skipped if a commit ID hasn't changed between scans in 1 week. For on-demand scans, scans are skipped if a commit ID hasn't changed between scans in 24 hours.

> **Note**
>
> If a scan configuration only has triggers for merge requests and pull requests, only the top 25 findings will be visible only in the source code management platform. None will be visible in Amazon Inspector.

To create a general scan configuration

1. Sign in using your credentials. Open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. From the navigation pane, choose **Code Security**.
3. Choose **Configurations**, and then choose **Create scan configuration**.
4. Under **Scan details**, do the following:
   - For **Configuration name**, enter a name for the scan configuration.
5. Under **Scan frequency**, specify how often code is scanned by choosing **Change-based and periodic scanning** or **Customized scanning types and triggers**.
   a. (Option 1) If you choose **Change based and periodic scanning**, choose **Enable periodic scanning** or **Disable periodic scanning**.
      - . If you choose **Enable periodic scanning**, set the scan frequency by choosing the week and day you want code to be scanned.
   b. (Option 2) If you choose **Customized scanning**, decide whether to enable scanning when code is changed and periodic scanning.
      i. Choose **Enable scanning when code is changed** or **Disable scanning when code is changed**. If you choose **Enable scanning when code is changed**, specify when scans are triggered from the dropdown.
      ii. Choose **Enable periodic scanning** or **Disable periodic scanning**. If you choose **Enable periodic scanning**, set the scan frequency by choosing the week and day you want code to be scanned. You can also scan on event-based triggers. These events include

when a pull request is open against the default branch and when a commit is pushed to the default branch.

6. Under **Scan analysis**, decide whether to configure a complete scanning analysis or customized scanning analysis:

   a. (Option 1) If you choose **Complete scanning analysis**, you apply all of the following scan analyses:

      - *Static Application Security Testing* – Analyzes source code for vulnerabilities.
      - *IaC scanning* – Analyzes scripts and code that configure and provision infrastructure.
      - *Static software composition analysis* – Examines open source packages in applications.

   b. (Option 2) If you choose **Customized scanning analysis**, you must choose at least one type of the previously mentioned scan analysis types from the dropdown menu:

7. (Optional) For **Tags**, create a key-value pair to apply to your project. You can create up to 50 tags.
8. Choose **Next**.
9. Under **Repository selection**, choose **All repositories** or **Specific repositories**.

   a. (Option 1) If you choose **All repositories**, scanning is enabled for any of your existing repositories.

   b. (Option 2) If you choose **Specific repositories**, scanning is enabled only for the repositories that you specify.

10. Choose **Next**.
11. Review your choices, and then choose **Create scan configuration**.

> **Note**
>
> General scan configurations are applied to all existing code repositories only. They will not be applied to new code repositories.

Viewing scan configurations

The following procedure describes how to view scan configurations in the Amazon Inspector console.

> **Note**
>
> When you view your scan configuration at the organization level, some of the details in the **Code Security** screen will differ to reflect your AWS account.

To view details for a scan configuration

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. From the navigation pane, choose **Code Security**.
3. Choose **Configurations** to view a list of your scan configurations. If you're the delegated administrator, the list include your organization's scan configurations. You can see the name of each scan configuration and who created each scan configuration (AWS account ID or organization ID). You can also view which scanning types and scan analysis type are applied to the configuration. You can even filter your scan configuration by different fields in the search bar.

Viewing details for a scan configuration

The following procedure describes how to view details for a scan configuration in the Amazon Inspector console.

To view details for a scan configuration

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. From the navigation pane, choose **Code Security**.
3. Choose **Configurations**.
4. Choose the configuration you want to view details for. The scan configuration details screen provides an overview of the scan configuration. From this screen, you can view the scan configuration ARN, which scan frequency types are enabled, and which scan analysis types are enabled. You can also delete the scan configuration from this screen. If you're viewing a scan configuration that belongs to your organization, you can edit from this screen, too.

Editing a scan configuration

You can edit a scan configuration at any time. When editing a scan configuration, you can change the scan frequency, scan analysis, tags, and repositories to be scanned. For example, you edit a scan configuration to pause scanning for a particular repository. The following procedure describes how to edit a scan configuration.

To edit a scan configuration

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. From the navigation pane, choose **Code Security**.
3. Choose **Configurations**.
4. Select the configuration you want to edit, and then choose **Edit**. You can also choose the configuration you want to edit, and then choose **Edit**.

Deleting a scan configuration

You can delete a scan configuration at any time. This topic describes how to delete a scan configuration.

To delete a scan configuration

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. From the navigation pane, choose **Code security**.
3. Choose **Configurations**.
4. Select the configuration you want to delete, and then choose **Delete**. Or choose the configuration you want to delete, and then choose **Delete**.

Performing an on-demand scan

You can perform an on-demand for your projects. When you perform an on-demand scan, a union of all your configured scan configurations is applied to your selected project. If your account is the delegated administrator account for an organization, you can perform an on-demand scan for

projects that belong to member accounts. The following procedure describes how to perform an on-demand scan in the Amazon Inspector console.

To perform an on-demand scan

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. From the navigation pane, choose **Code security**.
3. Choose **Code repositories**.
4. Select the project you want to scan, and then choose **On-demand** scan.

Supported languages for Amazon Inspector code security

This topic includes the supported languages for Amazon Inspector Code Security.

Supported languages for SAST

- C# (all versions but .Net 6.0 and later is recommended)
- C (C11 or earlier)
- C++ (C++ 17 or earlier)
- Go (Go 1.18 only)
- Java (Java 17 or earlier)
- JavaScript (EMCMAScript 2021 or earlier)
- JSX (React 17 or earlier)
- Kotlin (Kotlin 2.0 or earlier)
- PHP (PHP 8.2 or earlier)
- Python (Python 3.11 or earlier within the Python 3 series)
- Ruby (Ruby 2.7 and 3.2 only)
- Rust
- Scala (Scala 3.2.2 or earlier)
- Shell
- TSX
- TypeScript (all versions)

Supported languages for software composition analysis

- Go (Go 1.18 only)
- Java (Java 17 or earlier)
- JavaScript (EMCMAScript 2021 or earlier)
- PHP (PHP 8.2 or earlier)
- Python (Python 3.11 or earlier within the Python 3 series)
- .Net
- Ruby (Ruby 2.7 and 3.2 only)
- Rust

Languages for Infrastructure as Code

- AWS CDK (Python and TypeScript)
- AWS CloudFormation (2010–09–09)
- Terraform (1.6.2 or earlier)

Deactivating Code Security

For more information about deactivating Code Security, see Deactivating a scan type.

Understanding Amazon Inspector findings

Amazon Inspector generates a finding when it detects a vulnerability in Amazon EC2 instances, Amazon ECR containers images, and Lambda functions. It also generates findings for code vulnerabilities detected in first-party application source code, third-party application dependencies, and Infrastructure as Code. A finding is a detailed report about a vulnerability impacting one of your AWS resources.

Findings are named after vulnerabilities and provide severity ratings, information about impacted AWS resources and non AWS resources, and details that describe how to remediate detected vulnerabilities. Amazon Inspector stores all of your active findings until you remediate them.

When a resource is deleted, terminated, or no longer eligible for scanning, Amazon Inspector automatically closes findings associated with the resource and then deletes the findings after 3 days. If findings are closed for any other reason, they are deleted after 30 days.

> **Note**
>
> Amazon Inspector will reopen a remediated finding within seven days of closing the finding if the issue that caused the vulnerability reoccurs.

If you disable Amazon Inspector, findings are removed after 24 hours. If a resource is terminated, any finding related to the resource is removed after 3 days. The same occurs for any finding attached to a resource where scanning is no longer eligible. If AWS suspends your account, findings are removed after 90 days. Findings for stopped instances remain active.

Findings states

Amazon Inspector categorizes findings in the following states.

Active

Amazon Inspector categorizes a finding that hasn't been remediated as **Active**.

Suppressed

Amazon Inspector categorizes a finding subject to one or more suppression rules as **Suppressed**.

Closed

When a finding has been remediated, Amazon Inspector categorizes the finding as **Closed**.

Topics

Amazon Inspector finding types

This section describes the different finding types in Amazon Inspector.

Topics

Package vulnerability

Package vulnerability findings identify software packages in your AWS environment that are exposed to Common Vulnerabilities and Exposures (CVEs). Attackers can exploit these unpatched vulnerabilities to compromise the confidentiality, integrity, or availability of data, or to access other systems. The CVE system is a reference method for publicly known information security vulnerabilities and exposures. For more information, see https://www.cve.org/.

Amazon Inspector can generate package vulnerability findings for EC2 instances, ECR container images, and Lambda functions. Package vulnerability findings have additional details unique to this finding type, these are the Inspector score and vulnerability intelligence.

Code vulnerability

Code vulnerability findings help identify lines of code that can be exploited. Code vulnerabilities include missing encryption, data leaks, injection flaws, and weak cryptography. Amazon Inspector

generates code vulnerability findings through Lambda function scanning and its Code Security feature.

Amazon Inspector evaluates Lambda function application code using automated reasoning and machine learning to analyzes application code for overall security compliance. It identifies policy violations and vulnerabilities based on internal detectors developed in collaboration with Amazon CodeGuru. For a list of possible detections, see CodeGuru Detector Library.

Code scanning captures snippets of code to highlight detected vulnerabilities. For example, a code snippet might show hardcoded credentials or other sensitive materials in plaintext. CodeGuru stores code snippets associated with code vulnerabilities. By default, your code is encrypted with an AWS owned key. However, you can create a customer managed key to encrypt your code if you want more control over this information. For more information, see Encryption at rest for code in your findings.

> **Note**
>
> The delegated administrator for an organization cannot view code snippets that belong to member accounts.

Network reachability

Network reachability findings indicate that there are open network paths to Amazon EC2 instances in your environment. These findings appear when your TCP and UDP ports are reachable from the VPC edges, such as an internet gateway (including instances behind Application Load Balancers or Classic Load Balancers), a VPC peering connection, or a VPN through a virtual gateway. These findings highlight network configurations that may be overly permissive, such as mismanaged security groups, Access Control Lists, or internet gateways, or that may allow for potentially malicious access.

Amazon Inspector only generates network reachability findings for Amazon EC2 instances. Amazon Inspector performs scans for network reachability findings every 12 hours once Amazon Inspector is enabled.

Amazon Inspector evaluates the following configurations when scanning for network paths:

- Amazon EC2 instances
- Application Load Balancers

- Direct Connect
- Elastic Load Balancers
- Elastic Network Interfaces
- Internet Gateways
- Network Access Control Lists
- Route Tables
- Security Groups
- Subnets
- Virtual Private Clouds
- Virtual Private Gateways
- VPC endpoints
- VPC gateway endpoints
- VPC peering connections
- VPN connections

Viewing your Amazon Inspector findings

You can view your Amazon Inspector findings in the Amazon Inspector console and with the Amazon Inspector `ListFindings` API. In the Amazon Inspector console, you can view your findings in the Amazon Inspector dashboard and on the **Findings** screen. You can also view your findings in AWS Security Hub and Amazon Elastic Container Registry (Amazon ECR). By default, the Amazon Inspector dashboard and **Findings** screen show your active findings. You can also view your findings by category. The procedures in this section describe how to view your findings in Amazon Inspector console and with the Amazon Inspector API.

Console

To view Amazon Inspector findings

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. (Optional) From the navigation pane, choose **Dashboard**. The dashboard shows an overview of the coverage for your environment and only your critical findings.

3. (Optional) From the navigation pane, choose **Findings**. The **Findings** screen shows all of your active findings in a table where you can filter your findings by status and filter criteria. You can also create suppression rules to exclude findings from view. You can view details for a finding by choosing the name of the finding.
4. (Optional) From the navigation pane, choose one of the following options to view your findings by category:

   - By vulnerability – Shows your most critical vulnerabilities.
   - By account – Shows all of your accounts and the scan coverage and total number of findings with critical and high severity ratings.

     > **Note**
     >
     > This category is only available to delegated administrators.

   - By instance – Shows your most vulnerabile Amazon EC2 instances.

     > **Note**
     >
     > The findings grouped in this category don't include information about network availability.

   - By container image – Shows your most vulnerable Amazon ECR container images.
   - By container repository – Shows your most vulnerable repositories.
   - By Lambda function – Shows your most vulnerable Lambda functions.

API

To view Amazon Inspector findings

- Run the ListFindings API operation. In the request, specify filterCriteria to return specific findings.

Viewing details for your Amazon Inspector findings

The procedure in this section describes how to view details for Amazon Inspector findings.

To view the details for a finding

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home
2. Select the Region to view findings in.
3. In the navigation pane, choose **Findings** to display the findings list
4. (Optional) Use the filter bar to select a specific finding. For more information, see Filtering your Amazon Inspector findings.
5. Choose a finding to view its details panel.

The **Finding details** panel contains the basic identifying features of the finding. This includes the title of the finding as well as a basic description of the vulnerability identified, remediation suggestions, and a severity score. For information about scoring, see Understanding severity levels for your Amazon Inspector findings.

The details available for a finding varies depending on finding type and the **Resource affected**.

All findings contain the AWS account ID number the finding was identified for, a severity, a finding **Type**, the date the finding was created at, and a **Resource affected** section with details about that resource.

The finding **Type** determines the remediation and vulnerability intelligence information available for the finding. Depending on the finding type, different finding details are available.

Package Vulnerability

Package vulnerability findings are available for EC2 instances, ECR container images, and Lambda functions. See Package vulnerability for more info.

Package vulnerability findings also include Viewing the Amazon Inspector score and understanding vulnerability intelligence details.

This finding type has the following details:

- **Fix available** – Indicates if the vulnerability is fixed in a newer version of the affected packages. Has one of the following values:
  - YES, which means all the affected packages have a fixed version.
  - NO, which means no affected packages have a fixed version.

  - `PARTIAL`, which means one or more (but not all) of the affected packages have a fixed version.
- **Exploit available** – Indicates the vulnerability has a known exploit.
  - `YES`, which means the vulnerability discovered in your environment has a known exploit. Amazon Inspector doesn't have visibility into the use of exploits in an environment.
  - `NO`, which means this vulnerability doesn't have a known exploit.
- **Affected packages** – Lists each package identified as vulnerable in the finding, and the details of each package:
- **Filepath** – The EBS volume ID and partition number associated with a finding. This field is present in findings for EC2 instances scanned using Agentless scanning.
- **Installed version / Fixed version** – The version number of the currently installed package that a vulnerability was detected for. Compare the installed version number with the value after the slash (**/**). The second value is the version number of the package that fixes the detected vulnerability as provided by the Common Vulnerabilities and Exposures (CVEs) or advisory associated with the finding. If the vulnerability has been fixed in multiple versions, this field lists the most recent version that includes the fix. If a fix isn't available, this value is `None available`.

  > **Note**
  >
  > If a finding was detected before Amazon Inspector began including this field in findings, the value for this field is empty. However, a fix may be available.

- **Package manager** – The package manager used to configure this package.
- **Remediation** – If a fix is available through an updated package or programming library, this section includes the commands that you can run to make the update. You can copy the provided command and run it in your environment.

  > **Note**
  >
  > Remediation commands are provided from vendor data feeds and may vary depending on your system configuration. Review finding references or operating system documentation for more specific guidance.

- **Vulnerability details** – provides a link to the Amazon Inspector preferred source for the CVE identified in the finding, such as National Vulnerability Database (NVD), REDHAT, or another

OS vendor. Additionally, you will find the severity scores for the finding. For more information about severity scoring such as, see Understanding severity levels for your Amazon Inspector findings. The following scores are included, including the scoring vectors for each:

- Exploit Prediction Scoring System (EPSS) score
- Inspector score
- CVSS 3.1 from Amazon CVE
- CVSS 3.1 from NVD
- CVSS 2.0 from NVD (where applicable, for older CVEs)

- **Related vulnerabilities** – Specifies other vulnerabilities related to the finding. Typically these are other CVEs that impact the same package version, or other CVEs within the same group as the finding CVE, as determined by the vendor.

Code vulnerability

Code vulnerability findings are available for Lambda functions only. See Code vulnerability for more info. This finding type has the following details:

- **Fix available** – For code vulnerabilities this value is always YES.
- **Detector name** – The name of the CodeGuru detector used to detect the code vulnerability. For a list of possible detections, see the Q Detector Library.
- **Detector tags** – The CodeGuru tags associated with the detector, CodeGuru uses tags to categorize detections.
- **Relevant CWE** – IDs of the Common Weakness Enumeration (CWE)s associated with the code vulnerability.
- **File path** – The file location of the code vulnerability.
- **Vulnerability location** – For Lambda code scanning code vulnerabilities, this field shows the exact lines of code where Amazon Inspector found the vulnerability.
- **Suggested remediation** – This suggests how the code can be edited to remediate the finding.

Network reachability

Network reachability findings are only available for EC2 instances. See Network reachability for more info. This finding type has the following details:

- **Open port range** – The port range through which the EC2 instance could be accessed.
- **Open network paths** – Shows the open access path to the EC2 instance. Select an item on the path for more information.
- **Remediation** – Recommends a method for closing the open network path.

Viewing the Amazon Inspector score and understanding vulnerability intelligence details

Amazon Inspector creates a score for Amazon Elastic Compute Cloud (Amazon EC2) instance findings. You can view the Amazon Inspector score and vulnerability intelligence details in the Amazon Inspector console. The Amazon Inspector score provides you with details that you can compare with metrics in the Common Vulnerability Scoring System. These details are only available for package vulnerability findings. This section describes how to interpret the Amazon Inspector score and understand vulnerability intelligence details.

Amazon Inspector score

The Amazon Inspector score is a contextualized score that Amazon Inspector creates for each EC2 instance finding. The Amazon Inspector score is determined by correlating the base CVSS v3.1 score information with information collected from your compute environment during scans, such as network reachability results and exploitability data. For example, the Amazon Inspector score of a finding may be lower than the base score if the vulnerability is exploitable over the network but Amazon Inspector determines that no open network path to the vulnerable instance is available from the internet.

The base score for a finding is the CVSS v3.1 base score provided by the vendor. RHEL, Debian, or Amazon vendor base scores are supported, for other vendors, or cases where the vendor hasn't provided a score Amazon Inspector uses the base score from the National Vulnerability Database (NVD). Amazon Inspector uses the Common Vulnerability Scoring System Version 3.1 Calculator to calculate the score. You can see the source of the base score of an individual finding in the finding's details under **vulnerability details**, as **Vulnerability source** (or packageVulnerabilityDetails.source in the finding JSON)

> **Note**
>
> Amazon Inspector score isn't available for Linux instances running Ubuntu. This is because Ubuntu defines its own vulnerability severity that may differ from the associated CVE severity.

Amazon Inspector score details

When you open the details page of a finding you can select the **Inspector score and vulnerability intelligence** Tab. This panel shows the difference between the base score and the **Inspector score**. This section explains how Amazon Inspector assigned the severity rating based on a combination of the Amazon Inspector score and the vendor score for the software package. If the scores differ this panel shows an explanation of why.

In the **CVSS score metrics** section you can see a table with comparisons between the CVSS base score metrics and the **Inspector score**. The metrics compared are the base metrics defined in the CVSS specification document maintained by first.org. The following is a summary of the base metrics:

Attack Vector

The context by which a vulnerability can be exploited. For Amazon Inspector findings this can be Network, **Adjacent Network**, or **Local**.

Attack Complexity

This describes the level of difficulty an attacker will face when exploiting the vulnerability. A **Low** score means that the attacker will need to meet little or no additional conditions to exploit the vulnerability. A **High** score means that an attacker will need invest a considerable amount of effort in order carry out a successful attack with this vulnerability.

Privilege Required

This describes the level of privilege an attacker will need to exploit a vulnerability.

User Interaction

This metric states if a successful attack using this vulnerability requires a human user, other than the attacker.

Scope

This states whether a vulnerability in one vulnerable component impacts resources in components beyond the vulnerable component's security scope. If this value is **Unchanged** the affected resource and the impacted resource are the same. If this value is **Changed** then the vulnerable component can be exploited to impact resources managed by different security authorities.

Confidentiality

This measures the level of impact to the confidentiality of data within a resource when the vulnerability is exploited. This ranges from **None**, where no confidentiality is lost, to **High** where all information within a resource is divulged or confidential information such as passwords or encryption keys can be divulged.

Integrity

This measures the level of impact to the integrity of data within the impacted resource if the vulnerability is exploited. Integrity is at risk when the attacker to modify files within impacted resources. The score ranges from **None**, where the exploit does not allow an attacker to modify any information, to **High**, where if exploited, the vulnerability would allow an attacker to modify any or all files, or the files that could be modified have serious consequences.

Availability

This measures the level of impact to the availability of the impacted resource when the vulnerability is exploited. The score ranges from **None**, when the vulnerability does not impact availability at all, to **High**, where if exploited, the attacker can completely deny availability to the resource, or cause a service to become unavailable.

Vulnerability Intelligence

This section summarizes available intelligence about the CVE from Amazon as well as industry standard security intelligence sources such as Recorded Future, and Cybersecurity and Infrastructure Security Agency (CISA).

> **Note**
>
> Intel from CISA, Amazon, or Recorded Future won't be available for all CVEs.

You can view vulnerability intelligence details in the console or by using the BatchGetFindingDetails API. The following details are available in the console:

ATT&CK

This section shows the MITRE tactics, techniques, and procedures (TTPs) associated with the CVE. The associated TTPs are shown, if there are more than two applicable TTPs you can select

the link to see a complete list. Selecting a tactic or technique opens information about it on the MITRE website.

CISA

This section covers relevant dates associated with the vulnerability. The date Cybersecurity and Infrastructure Security Agency (CISA) added the vulnerability to Known Exploited Vulnerabilities Catalog, based on evidence of active exploitation, and the Due date CISA expects systems to be patched by. This information is sourced from CISA.

Known malware

This section lists known exploit kits and tools that exploit this vulnerability.

Evidence

This section summarizes the most critical security events involving this vulnerability. If more than 3 events have the same criticality level the top three most recent events are displayed.

Last time reported

This section shows the Last known public exploit date for this vulnerability.

Understanding severity levels for your Amazon Inspector findings

When Amazon Inspector generates a finding, it assigns a severity rating to the finding. Severity ratings help you assess and prioritize your findings. The severity rating for a finding corresponds to a numerical score and level: **informational**, **low**, **medium**, **high**, and **critical**. Amazon Inspector determines the severity rating for a finding based on the finding type. This section describes how Amazon Inspector determines a severity rating for each finding type.

Software package vulnerability severity

Amazon Inspector uses the NVD/CVSS score as the basis of severity scoring for software package vulnerabilities. The NVD/CVSS score is the vulnerability severity score published by the NVD and defined by the CVSS. The NVD/CVSS score is a composition of security metrics, such as attack complexity, exploit code maturity, and privileges required. Amazon Inspector produces a numerical score from 1 to 10 that reflects the vulnerability's severity. Amazon Inspector categorizes this as a base score because it reflects the severity of a vulnerability according to its intrinsic characteristics, which are constant over time. This score also assumes the reasonable worst-case impact across

different deployed environments. The CVSS v3 standard maps CVSS scores to the following severity ratings.

Score	Rating
0	Informational
0.1–3.9	Low
4.0–6.9	Medium
7.0–8.9	High
9.0–10.0	Critical

Package vulnerability findings can also have a severity of **Untriaged**. This means that the vendor hasn't yet set a vulnerability score for the detected vulnerability. In this case, we recommend using the reference URLs for the finding to research that vulnerability and respond accordingly.

Package vulnerability findings include the following scores and associated scoring vectors as part of their finding details:

- EPSS score
- Inspector score
- CVSS 3.1 from Amazon CVE
- CVSS 3.1 from NVD
- CVSS 2.0 from NVD (where applicable)

Code vulnerability severity

For code vulnerability findings Amazon Inspector uses the severity levels defined by the Amazon CodeGuru detectors that generated the finding. Each detector is assigned a severity using the CVSS v3 scoring system. For an explanation of the severities CodeGuru uses see Severity definitions in the CodeGuru guide. For a list of detectors by severity, select from the supported programming languages below:

- Python detectors by severity

- Java detectors by severity

Network reachability severity

Amazon Inspector determines the severity for a network reachability vulnerability based on the service, ports, and protocols that are exposed and by the type of open path. The following table defines these severity ratings. The value in the **Open path rating** column represents open paths from virtual gateways, peered VPCs, and AWS Direct Connect networks. All other exposed services, ports, and protocols have an Informational severity rating.

Service	TCP ports	UDP ports	Internet path rating	Open path rating
DHCP	67, 68, 546, 547	67, 68, 546, 547	Medium	Informational
Elasticsearch	9300, 9200	NA	Medium	Informational
FTP	21	21	High	Medium
Global catalog LDAP	3268	NA	Medium	Informational
Global catalog LDAP over TLS	3269	NA	Medium	Informational
HTTP	80	80	Low	Informational
HTTPS	443	443	Low	Informational
Kerberos	88, 464, 543, 544, 749, 751	88, 464, 749, 750, 751, 752	Medium	Informational
LDAP	389	389	Medium	Informational
LDAP over TLS	636	NA	Medium	Informational
MongoDB	27017, 27018, 27019, 28017	NA	Medium	Informational
MySQL	3306	NA	Medium	Informational

NetBIOS	137, 139	137, 138	Medium	Informational
NFS	111, 2049, 4045, 1110	111, 2049, 4045, 1110	Medium	Informational
Oracle	1521, 1630	NA	Medium	Informational
PostgreSQL	5432	NA	Medium	Informational
Print services	515	NA	High	Medium
RDP	3389	3389	Medium	Low
RPC	111, 135, 530	111, 135, 530	Medium	Informational
SMB	445	445	Medium	Informational
SSH	22	22	Medium	Low
SQL Server	1433	1434	Medium	Informational
Syslog	601	514	Medium	Informational
Telnet	23	23	High	Medium
WINS	1512, 42	1512, 42	Medium	Informational

Managing findings in Amazon Inspector

With Amazon Inspector, you can manage your findings in different ways. You can filter your findings based on their status. You can search your findings based on filter criteria. You can create suppression rules to exclude findings from your list of findings. You can also export findings to AWS Security Hub, Amazon EventBridge, and Amazon Simple Storage Service (Amazon S3).

Topics

Filtering your Amazon Inspector findings

You can filter your Amazon Inspector findings using filter criteria. If a finding doesn't match your filter criteria, Amazon Inspector excludes the finding from view. This section describes how to filter your Amazon Inspector findings using filter criteria.

Creating filters in the Amazon Inspector console

In each findings view, you can use the filter functionality to locate findings with specific characteristics. Filters are removed when you move to a different tabbed view.

A filter is made up of a filter criteria, which consists of a filter attribute paired with a filter value. Findings that do not match your filter criteria are excluded from the findings list. For example, to see all findings that are associated with your administrator account, you can choose the AWS account ID attribute and pair it with the value of your twelve digit AWS account ID.

Some filter criteria apply to all findings, while others are available for specific resource types or finding types only.

To apply a filter to the findings view

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.

2. In the navigation pane, choose **Findings**. The default view displays all findings with an **Active** status.
3. To filter findings by criteria, select the *Add filter* bar to see a list of all applicable filter criteria for that view. Different filter criteria are available in different views.
4. Choose a criterion that you want to filter by from the list.
5. From the criterion input pane enter the desired filter values to define that criterion.
6. Choose **Apply** to apply that filter criterion to your current results. You can continue to add other filter criterion by selecting the filter input bar again.
7. (Optional) To view your suppressed or closed findings, choose **Active** in the filter bar, and then choose **Suppressed** or **Closed**. Choose **Show all** to see active, suppressed, and closed findings in the same view.

Suppressing Amazon Inspector findings

You can create suppression rules to hide findings that match criteria. For example, you can create a suppression rule to hide findings based on their severity ratings. If Amazon Inspector generates a finding that matches your suppression rule, Amazon Inspector suppresses the finding and hides it from view. Amazon Inspector stores suppressed findings until they're remediated. Once a suppressed finding is remediated, Amazon Inspector closes the finding. You can view suppressed findings in the console.

You create suppression rules to prioritize your most important findings. Suppression rules don't have any impact on your findings, as they only hide findings from view. You cannot create a suppression rule that closes or remediates findings. You can also suppress unwanted findings in AWS Security Hub with an Amazon EventBridge rule. The procedures in this section describe how to create, view, edit, and delete a suppression rule.

> **Note**
>
> Only the delegated administrator for an organization can create and manage suppression rules.

Creating a suppression rule

You can create suppression rules to filter the list of findings that are shown by default. You can create a suppression rule programmatically by using the CreateFilter API and specifying SUPRESS as the value for `action`.

> **Note**
>
> Only stand alone accounts and Amazon Inspector delegated administrators can create and manage suppression rules. Members in an organization will not see an option for suppression rules in the navigation pane.

To create a suppression rule (console)

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. In the navigation pane, choose **Suppression rules**. Then choose **Create rule**.
3. For each criterion, do the following:
   - Select the filter bar to see a list of filter criteria that you can add to your suppression rule.
   - Select the filter criteria for your suppression rule.
4. When you have finished adding criteria, enter a name for the rule and an optional description.
5. Choose **Save rule**. Amazon Inspector immediately applies the new suppression rule and hides any findings that match the criteria.

Viewing suppressed findings

By default, Amazon Inspector does not display suppressed findings in the Amazon Inspector console. However, you can view the findings suppressed by a particular rule.

To view suppressed findings

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. In the navigation pane, select **Suppression rules**.
3. In the suppression rules list, select the title of the rule.

Editing a suppression rule

You can make changes to suppression rules at any time.

To modify suppression rules

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. From the navigation pane, choose **Suppression rules**.
3. Choose the name of the suppression rule that you want to change, and then choose **Edit**.
4. Make your intended changes, and then choose **Save**.

Deleting a suppression rule

You can delete suppression rules. If you delete a suppression rule, Amazon Inspector stops suppressing new and existing occurrences of findings that meet the rule criteria and that aren't suppressed by other rules.

After you delete a suppression rule, new and existing occurrences of findings that met the rule's criteria have a status of **Active**. This means that they appear by default on the Amazon Inspector console. In addition, Amazon Inspector publishes these findings to AWS Security Hub and Amazon EventBridge as events.

To delete a suppression rule

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. In the navigation pane, select **Suppression rules**.
3. Select the check box next to the title of the suppression rule you want to delete.
4. Choose **Delete**, and then confirm your choice to permanently delete the rule.

Exporting Amazon Inspector findings reports

A findings report is a CSV or JSON file that provides a detailed snapshot of your findings. You can export a findings report to AWS Security Hub, Amazon EventBridge, and Amazon Simple Storage Service (Amazon S3). When you configure a findings report, you specify which findings to include

in it. By default, your findings report includes data for all of your active findings. If you're the delegated administrator for an organization, your findings report includes data for all member accounts in the organization. To customize a findings report, create and apply a filter to it.

When you export a findings report, Amazon Inspector encrypts your findings data with an AWS KMS key that you specify. After Amazon Inspector encrypts your findings data, it stores your finding report in an Amazon S3 bucket that you specify. Your AWS KMS key must be used in the same AWS Region as your Amazon S3 bucket. Your AWS KMS key policy must allow Amazon Inspector to use it, and your Amazon S3 bucket policy must allow Amazon Inspector to add objects to it. After you export your findings report, you can download it from your Amazon S3 bucket or transfer it to new location. You can also use your Amazon S3 bucket as a repository for other exported findings reports.

This section describes how to export a findings report in the Amazon Inspector console. The following tasks require that you verify your permissions, configure an Amazon S3 bucket, configure an AWS KMS key, and configure and export a findings report.

> **Note**
>
> If you export a findings report with the Amazon Inspector CreateFindingsReport API, you can only view your active findings. If you want to view your suppressed or closed findings, you must specify SUPPRESSED or CLOSED as part of your filter criteria.

Tasks

- Step 1: Verify your permissions
- Step 2: Configure an S3 bucket
- Step 3: Configure an AWS KMS key
- Step 4: Configure and export a findings report
- Troubleshoot export errors

Step 1: Verify your permissions

> **Note**
>
> After you export a findings report for the first time, steps 1–3 are optional. Following these steps is based on whether you want to use the same Amazon S3 bucket and AWS

KMS key for other exported findings reports. If you want to export a findings report programmatically after completing steps 1–3, use the CreateFindingsReport operation of the Amazon Inspector API.

Before you export a findings report from Amazon Inspector, verify that you have the permissions that you need to both export findings reports and configure resources for encrypting and storing the reports. To verify your permissions, use AWS Identity and Access Management (IAM) to review the IAM policies that are attached to your IAM identity. Then compare the information in those policies to the following list of actions that you must be allowed to perform to export a findings report.

Amazon Inspector

For Amazon Inspector, verify that you're allowed to perform the following actions:

- `inspector2:ListFindings`
- `inspector2:CreateFindingsReport`

These actions allow you to retrieve findings data for your account and to export that data in findings reports.

If you plan to export large reports programmatically, you might also verify that you're allowed to perform the following actions: `inspector2:GetFindingsReportStatus`, to check the status of reports, and `inspector2:CancelFindingsReport`, to cancel exports that are in progress.

AWS KMS

For AWS KMS, verify that you're allowed to perform the following actions:

- `kms:GetKeyPolicy`
- `kms:PutKeyPolicy`

These actions allow you to retrieve and update the key policy for the AWS KMS key that you want Amazon Inspector to use to encrypt your report.

To use the Amazon Inspector console to export a report, also verify that you're allowed to perform the following AWS KMS actions:

- `kms:DescribeKey`
- `kms:ListAliases`

These actions allow you to retrieve and display information about the AWS KMS keys for your account. You can then choose one of these keys to encrypt your report.

If you plan to create a new KMS key for encryption of your report, you also need to be allowed to perform the `kms:CreateKey` action.

Amazon S3

For Amazon S3, verify that you're allowed to perform the following actions:

- `s3:CreateBucket`
- `s3:DeleteObject`
- `s3:PutBucketAcl`
- `s3:PutBucketPolicy`
- `s3:PutBucketPublicAccessBlock`
- `s3:PutObject`
- `s3:PutObjectAcl`

These actions allow you to create and configure the S3 bucket where you want Amazon Inspector to store your report. They also allow you to add and delete objects from the bucket.

If you plan to use the Amazon Inspector console to export your report, also verify that you're allowed to perform the `s3:ListAllMyBuckets` and `s3:GetBucketLocation` actions. These actions allow you to retrieve and display information about the S3 buckets for your account. You can then choose one of these buckets to store the report.

If you're not allowed to perform one or more of the required actions, ask your AWS administrator for assistance before you proceed to the next step.

Step 2: Configure an S3 bucket

After you verify your permissions, you're ready to configure the S3 bucket where you want to store your findings report. It can be an existing bucket for your own account, or an existing bucket that's owned by another AWS account and you're allowed to access. If you want to store your report in a new bucket, create the bucket before you proceed.

The S3 bucket must be in the same AWS Region as the findings data that you want to export. For example, if you're using Amazon Inspector in the US East (N. Virginia) Region and you want to export findings data for that Region, the bucket must also be in the US East (N. Virginia) Region.

In addition, the bucket's policy must allow Amazon Inspector to add objects to the bucket. This topic explains how to update the bucket policy and it provides an example of the statement to add to the policy. For detailed information about adding and updating bucket policies, see Using bucket policies in the *Amazon Simple Storage Service User Guide*.

If you want to store your report in an S3 bucket that's owned by another account, work with the bucket's owner to update the bucket's policy. Also obtain the URI for the bucket. You'll need to enter this URI when you export your report.

To update the bucket policy

1. Sign in using your credentials, and then open the Amazon S3 console at https://console.aws.amazon.com/s3.
2. In the navigation pane, choose **Buckets**.
3. Choose the S3 bucket where you want to store the findings report.
4. Choose the **Permissions** tab.
5. In the **Bucket policy** section, choose **Edit**.
6. Copy the following example statement to your clipboard:

   JSON

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Sid": "allow-inspector",
            "Effect": "Allow",
            "Principal": {
                "Service": "inspector2.amazonaws.com"
            },
            "Action": [
                "s3:PutObject",
                "s3:PutObjectAcl",
                "s3:AbortMultipartUpload"
            ],
            "Resource": "arn:aws:s3:::amzn-s3-demo-bucket/*",
            "Condition": {
                "StringEquals": {
                    "aws:SourceAccount": "111122223333"
```

```
                },
                "ArnLike": {
                    "aws:SourceArn": "arn:aws:inspector2:us-
east-1:111122223333:report/*"
                }
            }
        }
    ]
}
```

7. In the **Bucket policy** editor on the Amazon S3 console, paste the preceding statement into the policy to add it to the policy.

   When you add the statement, ensure that the syntax is valid. Bucket policies use JSON format. This means that you need to add a comma before or after the statement, depending on where you add the statement to the policy. If you add the statement as the last statement, add a comma after the closing brace for the preceding statement. If you add it as the first statement or between two existing statements, add a comma after the closing brace for the statement.

8. Update the statement with the correct values for your environment, where:

   - *amzn-s3-demo-bucket* is the name of the bucket.
   - *111122223333* is the account ID for your AWS account.
   - *Region* is the AWS Region in which you're using Amazon Inspector and want to allow Amazon Inspector to add reports to the bucket. For example, `us-east-1` for the US East (N. Virginia) Region.

   > **Note**
   >
   > If you're using Amazon Inspector in a manually enabled AWS Region, also add the appropriate Region code to the value for the `Service` field. This field specifies the Amazon Inspector service principal.
   > For example, if you're using Amazon Inspector in the Middle East (Bahrain) Region, which has the Region code `me-south-1`, replace `inspector2.amazonaws.com` with `inspector2.me-south-1.amazonaws.com` in the statement.

   Note that the example statement defines conditions that use two IAM global condition keys:

- aws:SourceAccount – This condition allows Amazon Inspector to add reports to the bucket only for your account. It prevents Amazon Inspector from adding reports to the bucket for other accounts. More specifically, the condition specifies which account can use the bucket for the resources and actions specified by the `aws:SourceArn` condition.

  To store reports for additional accounts in the bucket, add the account ID for each additional account to this condition. For example:

  ```
  "aws:SourceAccount": [111122223333,444455556666,123456789012]
  ```

- aws:SourceArn – This condition restricts access to the bucket based on the source of the objects that are being added to the bucket. It prevents other AWS services from adding objects to the bucket. It also prevents Amazon Inspector from adding objects to the bucket while performing other actions for your account. More specifically, the condition allows Amazon Inspector to add objects to the bucket only if the objects are findings reports, and only if those reports are created by the account and in the Region specified in the condition.

  To allow Amazon Inspector to perform the specified actions for additional accounts, add Amazon Resource Names (ARNs) for each additional account to this condition. For example:

  ```
  "aws:SourceArn": [
      "arn:aws:inspector2:Region:111122223333:report/*",
      "arn:aws:inspector2:Region:444455556666:report/*",
      "arn:aws:inspector2:Region:123456789012:report/*"
  ]
  ```

  The accounts specified by the `aws:SourceAccount` and `aws:SourceArn` conditions should match.

  Both conditions help prevent Amazon Inspector from being used as a confused deputy during transactions with Amazon S3. Although we don't recommend it, you can remove these conditions from the bucket policy.

9. When you finish updating the bucket policy, choose **Save changes**.

Step 3: Configure an AWS KMS key

After you verify your permissions and configure the S3 bucket, determine which AWS KMS key you want Amazon Inspector to use to encrypt your findings report. The key must be a customer managed, symmetric encryption KMS key. In addition, the key must be in the same AWS Region as the S3 bucket that you configured to store the report.

The key can be an existing KMS key from your own account, or an existing KMS key that another account owns. If you want to use a new KMS key, create the key before proceeding. If you want to use an existing key that another account owns, obtain the Amazon Resource Name (ARN) of the key. You'll need to enter this ARN when you export your report from Amazon Inspector. For information about creating and reviewing the settings for KMS keys, see Managing keys in the *AWS Key Management Service Developer Guide*.

After you determine which KMS key you want to use, give Amazon Inspector permission to use the key. Otherwise, Amazon Inspector won't be able to encrypt and export the report. To give Amazon Inspector permission to use the key, update the key policy for the key. For detailed information about key policies and managing access to KMS keys, see Key policies in AWS KMS in the *AWS Key Management Service Developer Guide*.

> **Note**
>
> The following procedure is for updating an existing key to allow Amazon Inspector to use it. If you don't have an existing key, see Creating keys in the *AWS Key Management Service Developer Guide*.

To update the key policy

1. Sign in using your credentials, and then open the AWS KMS console at https://console.aws.amazon.com/kms.
2. In the navigation pane, choose **Customer managed keys**.
3. Choose the KMS key that you want to use to encrypt the report. The key must be a symmetric encryption (**SYMMETRIC_DEFAULT**) key.
4. On the **Key policy** tab, choose **Edit**. If you do not see a key policy with an **Edit** button, you must first select **Switch to policy view**.
5. Copy the following example statement to your clipboard:

```
{
    "Sid": "Allow Amazon Inspector to use the key",
    "Effect": "Allow",
    "Principal": {
        "Service": "inspector2.amazonaws.com"
    },
    "Action": [
        "kms:Decrypt",
        "kms:GenerateDataKey*"
    ],
    "Resource": "*",
    "Condition": {
        "StringEquals": {
            "aws:SourceAccount": "111122223333"
        },
        "ArnLike": {
            "aws:SourceArn": "arn:aws:inspector2:Region:111122223333:report/*"
        }
    }
}
```

6. In the **Key policy** editor on the AWS KMS console, paste the preceding statement into the key policy to add it to the policy.

   When you add the statement, ensure that the syntax is valid. Key policies use JSON format. This means that you need to add a comma before or after the statement, depending on where you add the statement to the policy. If you add the statement as the last statement, add a comma after the closing brace for the preceding statement. If you add it as the first statement or between two existing statements, add a comma after the closing brace for the statement.

7. Update the statement with the correct values for your environment, where:

   - *111122223333* is the account ID for your AWS account.
   - *Region* is the AWS Region in which you want to allow Amazon Inspector to encrypt reports with the key. For example, `us-east-1` for the US East (N. Virginia) Region.

   Note

   If you're using Amazon Inspector in a manually enabled AWS Region, also add the appropriate Region code to the value for the `Service` field. For example,

if you're using Amazon Inspector in the Middle East (Bahrain) Region, replace `inspector2.amazonaws.com` with `inspector2.me-south-1.amazonaws.com`.

Like the example statement for the bucket policy in the preceding step, the `Condition` fields in this example use two IAM global condition keys:

- aws:SourceAccount – This condition allows Amazon Inspector to perform the specified actions only for your account. More specifically, it determines which account can perform the specified actions for the resources and actions specified by the `aws:SourceArn` condition.

  To allow Amazon Inspector to perform the specified actions for additional accounts, add the account ID for each additional account to this condition. For example:

  ```
  "aws:SourceAccount": [111122223333,444455556666,123456789012]
  ```

- aws:SourceArn – This condition prevents other AWS services from performing the specified actions. It also prevents Amazon Inspector from using the key while performing other actions for your account. In other words, it allows Amazon Inspector to encrypt S3 objects with the key only if the objects are findings reports, and only if those reports are created by the account and in the Region specified in the condition.

  To allow Amazon Inspector to perform the specified actions for additional accounts, add ARNs for each additional account to this condition. For example:

  ```
  "aws:SourceArn": [
      "arn:aws:inspector2:us-east-1:111122223333:report/*",
      "arn:aws:inspector2:us-east-1:444455556666:report/*",
      "arn:aws:inspector2:us-east-1:123456789012:report/*"
  ]
  ```

  The accounts specified by the `aws:SourceAccount` and `aws:SourceArn` conditions should match.

These conditions help prevent Amazon Inspector from being used as a confused deputy during transactions with AWS KMS. Although we don't recommend it, you can remove these conditions from the statement.

8. When you finish updating the key policy, choose **Save changes**.

Step 4: Configure and export a findings report

> **Note**
>
> You only can export only one findings report a time. If an export is currently in progress, you must wait until the export is complete before exporting another findings report.

After you verify your permissions and you configure resources to encrypt and store your findings report, you're ready to configure and export the report.

To configure and export a findings report

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. In the navigation pane, under **Findings**, choose **All findings**.
3. (Optional) By using the filter bar above the **Findings** table, add filter criteria that specify which findings to include in the report. As you add criteria, Amazon Inspector updates the table to include only those findings that match the criteria. The table provides a preview of the data that your report will contain.

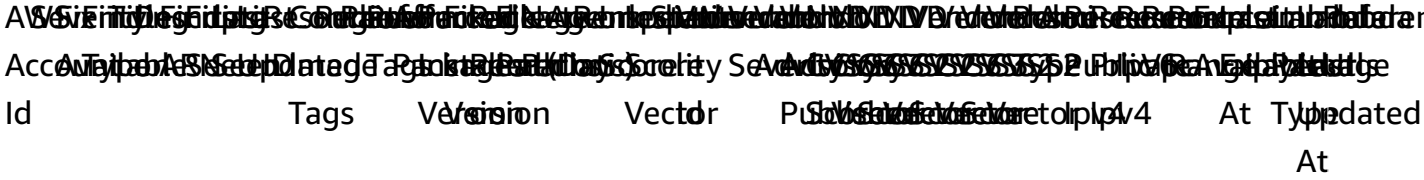
   > **Note**
   >
   > We recommend that you add filter criteria. If you don't, the report will include data for all of your findings in the current AWS Region that have a status of **Active**. If you're the Amazon Inspector administrator for an organization, this includes findings data for all the member accounts in your organization.
   > If a report includes data for all or many findings, it can take a long time to generate and export the report, and you can export only one report at a time.

4. Choose **Export findings**.
5. In the **Export settings** section, for **Export file type**, specify a file format for the report:

   - To create a JavaScript Object Notation (.json) file that contains the data, choose **JSON**.

     If you choose the **JSON** option, the report will include all the fields for each finding. For a list of possible JSON fields see the Finding data type in the Amazon Inspector API reference.
   - To create a comma-separated values (.csv) file that contains the data, choose **CSV**.

If you choose the **CSV** option, the report will include only a subset of the fields for each finding, approximately 45 fields that report key attributes of a finding. The fields include: *Finding Type, Title, Severity, Status, Description, First Seen, Last Seen, Fix Available, AWS account ID, Resource ID, Resource Tags*, and *Remediation*. These are in addition to fields that capture scoring details and reference URLs for each finding. The following is a sample of the CSV headers in a findings report:



6. Under **Export location**, for **S3 URI**, specify the S3 bucket where you want to store the report:

   - To store the report in a bucket that your account owns, choose **Browse S3**. Amazon Inspector displays a table of the S3 buckets for your account. Select the row for the bucket that you want, and then choose **Choose**.

     Tip

     To also specify an Amazon S3 path prefix for the report, append a slash (/) and the prefix to the value in the **S3 URI** box. Amazon Inspector then includes the prefix when it adds the report to the bucket, and Amazon S3 generates the path specified by the prefix.
     For example, if you want to use your AWS account ID as a prefix and your account ID is *111122223333*, append **/111122223333** to the value in the **S3 URI** box.
     A *prefix* is similar to a directory path within an S3 bucket. It allows you to group similar objects together in a bucket, much like you might store similar files together in a folder on a file system. For more information, see Organizing objects in the Amazon S3 console using folders in the *Amazon Simple Storage Service User Guide*.

   - To store the report in a bucket that another account owns, enter the URI for the bucket—for example, **`s3://DOC-EXAMPLE_BUCKET`**, where *DOC-EXAMPLE_BUCKET* is the name of the bucket. The bucket owner can find this information for you in the bucket's properties.

7. For **KMS key**, specify the AWS KMS key that you want to use to encrypt the report:

- To use a key from your own account, choose the key from the list. The list displays customer managed, symmetric encryption KMS keys for your account.
- To use a key that another account owns, enter the Amazon Resource Name (ARN) of the key. The key owner can find this information for you in the key's properties. For more information, see Finding the key ID and key ARN in the *AWS Key Management Service Developer Guide*.

8. Choose **Export**.

Amazon Inspector generates the findings report, encrypts it with the KMS key that you specified, and adds it to the S3 bucket that you specified. Depending on the number of findings that you chose to include in the report, this process can take several minutes or hours. When the export is complete, Amazon Inspector displays a message indicating that your findings report was exported successfully. Optionally choose **View report** in the message to navigate to the report in Amazon S3.

Note that you can export only one report a time. If an export is currently in progress, wait until that export is complete before you try to export another report.

Troubleshoot export errors

If an error occurs when you try to export a findings report, Amazon Inspector displays a message describing the error. You can use the information in this topic as a guide to identify possible causes and solutions for the error.

For example, verify that the S3 bucket is in the current AWS Region and the bucket's policy allows Amazon Inspector to add objects to the bucket. Also verify that the AWS KMS key is enabled in the current Region, and ensure that the key policy allows Amazon Inspector to use the key.

After you address the error, try to export the report again.

Cannot have multiple reports error

If you are attempting to create a report but Amazon Inspector is already generating a report, you will receive an error stating **Reason: Cannot have multiple reports in-progress**. This error occurs because Amazon Inspector can only generate one report for an account at a time.

To resolve the error you can wait for the other report to finish or cancel it before requesting a new report.

You can check the status of a report by using the GetFindingsReportStatus operation, this operation returns the report ID of any report that is currently being generated.

If you need to, you can use the report ID given by the `GetFindingsReportStatus` operation to cancel a export that is currently in progress by using the CancelFindingsReport operation.

Creating custom responses to Amazon Inspector findings with Amazon EventBridge

Amazon Inspector creates an event in Amazon EventBridge for newly generated findings and aggregated findings. Amazon Inspector also creates an event for any changes to the state of a finding. This means Amazon Inspector creates a new event for a finding when you take actions like restarting a resource or changing tags associated with a resource. When Amazon Inspector creates a new event for an updated finding, the finding `id` stays the same.

> **Note**
>
> If your account is an Amazon Inspector delegated administrator account, EventBridge publishes events to your account and the member account where the events originated.

When using EventBridge events with Amazon Inspector, you can automate tasks to help you respond to security issues your findings reveal. To receive notifications about Amazon Inspector findings based on EventBridge events, you must create an EventBridge rule and specify a target for Amazon Inspector. The EventBridge rule allows EventBridge to send notifications for Amazon Inspector findings, and the target specifies where to send the notifications.

Amazon Inspector emits events to the default event bus in the AWS Region where you are currently using Amazon Inspector. This means you must configure event rules for each AWS Region where you activated Amazon Inspector and configured Amazon Inspector to receive EventBridge events. Amazon Inspector emits events on a best-effort basis.

This section provides you with an example of an event schema and describes how to create an EventBridge rule.

Event schema

The following is an example of the Amazon Inspector event format for an EC2 finding event. For example schema of other finding types and event types, see *EventBridge schema*.

```
{
    "version": "0",
    "id": "66a7a279-5f92-971c-6d3e-c92da0950992",
    "detail-type": "Inspector2 Finding",
    "source": "aws.inspector2",
    "account": "111122223333",
    "time": "2023-01-19T22:46:15Z",
    "region": "us-east-1",
    "resources": ["i-0c2a343f1948d5205"],
    "detail": {
        "awsAccountId": "111122223333",
        "description": "\n It was discovered that the sound subsystem in the Linux
 kernel contained a\n race condition in some situations. A local attacker could use
 this to cause\n a denial of service (system crash).",
        "exploitAvailable": "YES",
        "exploitabilityDetails": {
            "lastKnownExploitAt": "Oct 24, 2022, 11:08:59 PM"
        },
        "findingArn": "arn:aws:inspector2:us-east-1:111122223333:finding/FINDING_ID",
        "firstObservedAt": "Jan 19, 2023, 10:46:15 PM",
        "fixAvailable": "YES",
        "lastObservedAt": "Jan 19, 2023, 10:46:15 PM",
        "packageVulnerabilityDetails": {
            "cvss": [{
                "baseScore": 4.7,
                "scoringVector": "CVSS:3.1/AV:L/AC:H/PR:L/UI:N/S:U/C:N/I:N/A:H",
                "source": "NVD",
                "version": "3.1"
            }],
            "referenceUrls": ["https://lore.kernel.org/all/
CAFcO6XN7JDM4xSXGhtusQfS2mSBcx50VJKwQpCq=WeLt57aaZA@mail.gmail.com/", "https://
ubuntu.com/security/notices/USN-5792-1", "https://ubuntu.com/security/notices/
USN-5791-2", "https://ubuntu.com/security/notices/USN-5791-1", "https://ubuntu.com/
security/notices/USN-5793-2", "https://git.kernel.org/pub/scm/linux/kernel/git/
torvalds/linux.git/commit/?id=8423f0b6d513b259fdab9c9bf4aaa6188d054c2d", "https://
ubuntu.com/security/notices/USN-5793-1", "https://ubuntu.com/security/notices/
USN-5792-2", "https://ubuntu.com/security/notices/USN-5791-3", "https://ubuntu.com/
security/notices/USN-5793-4", "https://ubuntu.com/security/notices/USN-5793-3",
 "https://git.kernel.org/linus/8423f0b6d513b259fdab9c9bf4aaa6188d054c2d(6.0-rc5)",
 "https://cve.mitre.org/cgi-bin/cvename.cgi?name=CVE-2022-3303"],
            "relatedVulnerabilities": [],
            "source": "UBUNTU_CVE",
```

```
            "sourceUrl": "https://people.canonical.com/~ubuntu-security/cve/2022/
CVE-2022-3303.html",
            "vendorCreatedAt": "Sep 27, 2022, 11:15:00 PM",
            "vendorSeverity": "medium",
            "vulnerabilityId": "CVE-2022-3303",
            "vulnerablePackages": [{
                "arch": "X86_64",
                "epoch": 0,
                "fixedInVersion": "0:5.15.0.1027.31~20.04.16",
                "name": "linux-image-aws",
                "packageManager": "OS",
                "remediation": "apt update && apt install --only-upgrade linux-image-
aws",
                "version": "5.15.0.1026.30~20.04.16"
            }]
        },
        "remediation": {
            "recommendation": {
                "text": "None Provided"
            }
        },
        "resources": [{
            "details": {
                "awsEc2Instance": {
                    "iamInstanceProfileArn": "arn:aws:iam::111122223333:instance-
profile/AmazonSSMRoleForInstancesQuickSetup",
                    "imageId": "ami-0b7ff1a8d69f1bb35",
                    "ipV4Addresses": ["172.31.85.212", "44.203.45.27"],
                    "ipV6Addresses": [],
                    "launchedAt": "Jan 19, 2023, 7:53:14 PM",
                    "platform": "UBUNTU_20_04",
                    "subnetId": "subnet-8213f2a3",
                    "type": "t2.micro",
                    "vpcId": "vpc-ab6650d1"
                }
            },
            "id": "i-0c2a343f1948d5205",
            "partition": "aws",
            "region": "us-east-1",
            "type": "AWS_EC2_INSTANCE"
        }],
        "severity": "MEDIUM",
        "status": "ACTIVE",
        "title": "CVE-2022-3303 - linux-image-aws",
```

```
        "type": "PACKAGE_VULNERABILITY",
        "updatedAt": "Jan 19, 2023, 10:46:15 PM"
    }
}
```

Creating an EventBridge rule to notify you of Amazon Inspector findings

To increase the visibility of Amazon Inspector findings, you can use EventBridge to set up automated finding alerts that are sent to a messaging hub. This topic shows you how to send alerts for `CRITICAL` and `HIGH` severity findings to email, Slack, or Amazon Chime. You'll learn how to set up an Amazon Simple Notification Service topic and then connect that topic to an EventBridge event rule.

Step 1. Set up an Amazon SNS topic and endpoint

To set up automatic alerts, you must first set up a topic in Amazon Simple Notification Service and add an endpoint. For more information, refer to the SNS guide.

This procedure establishes where you want to send Amazon Inspector findings data. The SNS topic can be added to an EventBridge event rule during or after the creation of the event rule.

Email setup

Creating an SNS topic

1. Sign in to the Amazon SNS console at https://console.aws.amazon.com/sns/v3/home.
2. From the navigation pane, select **Topics**, and then select **Create Topic**.
3. In the **Create topic** section, select **Standard**. Next, enter a topic name, such as **`Inspector_to_Email`**. Other details are optional.
4. Choose **Create Topic**. This opens a new panel with details for your new topic.
5. In the **Subscriptions** section, select **Create Subscription**.
6. a. From the **Protocol** menu, select **Email**.
   b. In the **Endpoint** field, enter the email address that you would like to receive notifications.

> **Note**
>
> You will be required to confirm your subscription through your email client after creating the subscription.

c. Choose **Create subscription**.

7. Look for a subscription message in your inbox and choose **Confirm Subscription**.

Slack setup

Creating an SNS topic

1. Sign in to the Amazon SNS console at https://console.aws.amazon.com/sns/v3/home.
2. From the navigation pane, select **Topics**, and then select **Create Topic**.
3. In the **Create topic** section, select **Standard**. Next, enter a topic name, such as **`Inspector_to_Slack`**. Other details are optional. Choose **Create topic** to complete endpoint creation.

Configuring an Amazon Q Developer in chat applications client

1. Navigate to the Amazon Q Developer in chat applications console at https://console.aws.amazon.com/chatbot/.
2. From the **Configured clients** pane, select **Configure new client**.
3. Choose **Slack**, and then choose **Configure** to confirm.

> **Note**
>
> When choosing Slack, you must confirm permissions for Amazon Q Developer in chat applications to access your channel by selecting **allow**.

4. Select **Configure new channel** to open the configuration details pane.

   a. Enter a name for the channel.

   b. For **Slack channel**, choose the channel that you want to use.

   c. In Slack, copy the channel ID of the private channel by right-clicking on the channel name and selecting **Copy Link**.

d. On the AWS Management Console, in the Amazon Q Developer in chat applications window, paste the channel ID that you copied from Slack into the **Private channel ID** field.

e. In **Permissions**, choose to create an IAM role using a template if you do not already have a role.

f. For **Policy** templates, choose **Notification permissions**. This is the IAM policy template for Amazon Q Developer in chat applications. This policy provides the necessary read and list permissions for CloudWatch alarms, events, and logs, and for Amazon SNS topics.

g. For **Channel guardrail policies**, choose **AmazonInspector2ReadOnlyAccess**.

h. Choose the Region in which you previously created your SNS topic, and then select the Amazon SNS topic you created to send notifications to the Slack channel.

5. Select **Configure**.

Amazon Chime setup

Creating an SNS topic

1. Sign in to the Amazon SNS console at https://console.aws.amazon.com/sns/v3/home.
2. Select **Topics** from the navigation pane, and then select **Create Topic**.
3. In the **Create topic** section, select **Standard**. Next, enter a topic name, such as **`Inspector_to_Chime`**. Other details are optional. Choose **Create topic** to complete.

Configuring an Amazon Q Developer in chat applications client

1. Navigate to the Amazon Q Developer in chat applications console at https://console.aws.amazon.com/chatbot/.
2. From the **Configured clients** panel, select **Configure new client**.
3. Choose **Chime**, and then choose **Configure** to confirm.
4. From the **Configuration details** pane, enter a name for the channel.
5. In Amazon Chime, open the desired chat room.

   a. Choose the gear icon in the upper-right corner and choose **Manage webhooks and bots**.

   b. Select **Copy URL** to copy the webhook URL to your clipboard.

6. On the AWS Management Console, in the Amazon Q Developer in chat applications window, paste the URL you copied into the **Webhook URL** field.
7. In **Permissions**, choose to create an IAM role using a template if you do not already have a role.
8. For **Policy** templates, choose **Notification permissions**. This is the IAM policy template for Amazon Q Developer in chat applications. It provides the necessary read and list permissions for CloudWatch alarms, events, and logs, and for Amazon SNS topics.
9. Choose the Region in which you previously created your SNS topic, and then select the Amazon SNS topic you created to send notifications to the Amazon Chime room.
10. Select **Configure**.

Step 2. Create an EventBridge rule for Amazon Inspector findings

1. Sign in using your credentials.
2. Open the Amazon EventBridge console at https://console.aws.amazon.com/events/.
3. Select **Rules** from the navigation pane, and then select **Create rule**.
4. Enter a name and optional description for your rule.
5. Select **Rule with an event pattern** and then **Next**.
6. In the **Event Pattern** pane, choose **Custom patterns (JSON editor)**.
7. Paste the following JSON into the editor.

```
{
  "source": ["aws.inspector2"],
  "detail-type": ["Inspector2 Finding"],
  "detail": {
    "severity": ["HIGH", "CRITICAL"],
    "status": ["ACTIVE"]
  }
}
```

Note

This pattern sends notifications for any active `CRITICAL` or `HIGH` severity finding detected by Amazon Inspector.

Select **Next** when you are finished entering the event pattern.

8. On the **Select targets** page, choose **AWS service**. Then, for **Select target type**, choose **SNS topic**.
9. For **Topic**, select the name of the SNS topic you created in step 1. Then choose **Next**.
10. Add optional tags if needed and choose **Next**.
11. Review your rule and then choose **Create rule**.

EventBridge for Amazon Inspector multi-account environments

If you're an Amazon Inspector delegated administrator, EventBridge rules appear on your account based on applicable findings from your member accounts. If you set up findings notifications through EventBridge in your administrator account, as detailed in the preceding section, you'll receive notifications about multiple accounts. In other words, you'll be notified of findings and events generated by your member accounts in addition to those generated by your own account.

You can use the `accountId` from the finding's JSON details to identify the member account from which the Amazon Inspector finding originated.

Working with the dashboard in Amazon Inspector

The dashboard provides a snapshot of aggregated statistics for resources that Amazon Inspector scans. Use the dashboard to learn about coverage for your environment and critical findings.

> **Note**
>
> If your account is the delegated administrator account for an organization, the dashboard shows information for your account and every other account in the organization.

This topic describes how to view the dashboard and understand the components that make up the dashboard.

Topics

Viewing the dashboard

The dashboard shows an overview of the coverage for your environment and critical findings. The dashboard refreshes data automatically every five minutes. You can refresh data manually by choosing the refresh icon near the top-right corner of the screen. You can view supporting data for an item by choosing the item.

> **Note**
>
> If your account is the delegated administrator account for an organization, you can view aggregated statistics for a member account by entering the member account ID in the **Account** field.

To view the dashboard:

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. From the navigation pane, choose **Dashboard**.

Understanding dashboard components and interpreting data

Each section of the dashboard provides insight into key metrics and findings data, so you can understand the vulnerability posture of your AWS resources in your current AWS Region.

Environment coverage

The **Environment coverage** section provides statistics about the resources scanned by Amazon Inspector. In this section, you can see the count and percentage of Amazon EC2 instances, Amazon ECR images and AWS Lambda functions scanned by Amazon Inspector. If you manage multiple accounts through AWS Organizations as an Amazon Inspector delegated administrator, you will also see the total number of organization accounts, the number with Amazon Inspector activated, and the resulting coverage percentage for the organization. You can also use this section to determine which resources are not covered by Amazon Inspector. These resources may contain vulnerabilities that could be exploited to put your organization at risk. For more details, see Assessing Amazon Inspector coverage of your AWS environment.

Choosing a coverage group takes you to the **Account management** page for the grouping you select. The account management page shows you details about which accounts, Amazon EC2 instances, and Amazon ECR repositories are covered by Amazon Inspector.

The following coverage groups are available:

- Account
- Instances
- Container repositories
- Container images
- Lambda

Critical findings

The **Critical findings** section provides a count of the critical vulnerabilities in your environment and a total count of all findings in your environment. In this section, the counts are shown per resource and assessment type. For more information about critical findings and how Amazon Inspector determines criticality, see Understanding Amazon Inspector findings.

Choosing a critical finding group takes you to the **All findings** page and automatically applies filters to show all critical findings that match the grouping you selected.

The following critical finding groups are available:

- Amazon Inspector code scan findings
- Amazon EC2 instance findings
- Amazon ECR container image findings
- Lambda function findings

Risk-based remediations

The **Risk-based remediations** section shows the top five software packages with critical vulnerabilities that affect the most resources in your environment. Remediating these packages can significantly reduce the number of critical risks to your environment. Choose the software package name to see associated vulnerability details and affected resources.

Accounts with the most critical findings

The **Accounts with the most critical findings** section shows the top five AWS accounts in your environment with the most critical findings, and the total number of findings for that account. This section is only viewable from the delegated administrator account when Amazon Inspector is configured for multi-account scanning with AWS Organizations. This view helps delegated administrators understand which accounts may be most at risk within the organization.

Choose **Account ID** to see more information about the affected member account.

Amazon ECR repositories with most critical findings

The **Elastic Container Registry (ECR) Repositories with most critical findings** section shows the top five Amazon ECR repositories in your environment with the most critical container image findings. The view shows the repository name, AWS account identifier, the repository creation date, number of critical vulnerabilities, and total number of vulnerabilities. This view helps you identify which repositories may be most at risk.

Choose **Repository name** to see more information about the affected repository.

Container images with most critical findings

The **Container images with most critical findings** section shows the top five container images in your environment with the most critical findings. The view shows image tag data, repository name, image digest, AWS account identifier, number of critical vulnerabilities, and total number of vulnerabilities. This view helps application owners identify which container images may need to be rebuilt and relaunched.

Choose **Container image** to see more information about the affected container image.

Instances with most critical findings

The **Instances with most critical findings** section shows the top five Amazon EC2 instances with the most critical findings. The view shows instance identifier, AWS account identifier, Amazon Machine Image (AMI) identifier, number of critical vulnerabilities, and total number of vulnerabilities. This view helps infrastructure owners identify which instances may require patching.

Choose **Instance ID** to see more information about the affected Amazon EC2 instance.

Amazon Machine Images (AMI) with most critical findings

The **Amazon Machine Images (AMIs) with most critical findings** section shows the top five AMIs in your environment with the most critical findings. The view shows the AMI identifier, AWS account identifier, number of affected EC2 instances running in the environment, the AMI creation date, the operating system platform of the AMI, the number of critical vulnerabilities, and the total number of vulnerabilities. This view helps infrastructure owners identify which AMIs may require rebuilding.

Choose **Affected instances** to see more information about the instances launched from the affected AMI.

AWS Lambda functions with most critical findings

The **AWS Lambda functions with most critical findings** section shows the top five Lambda functions in your environment with the most critical findings. The view shows the Lambda function name, AWS account identifier, runtime environment, the number of critical vulnerabilities, the number of high vulnerabilities, and the total number of vulnerabilities. This view helps infrastructure owners identify which Lambda functions may require remediation.

Choose **Function name** to see more information about the affected AWS Lambda function.

Amazon Inspector code scans with the most critical findings

The **Projects with the most critical code vulnerabilities** section shows the top five projects with critical findings. You can choose a project to view details about the findings. When you choose a project, you're directed to the repository where the findings are located. The findings tab shows the names of your findings and their severity ratings. It shows what type of analysis was used to generate your findings. It also shows how old your findings are and their statuses.

Searching the Amazon Inspector vulnerability database

You can search the Amazon Inspector vulnerability database for common vulnerabilities and exposures (CVE). Amazon Inspector uses information from the vulnerability database to produce details related to a CVE ID. You can view these details on the CVE details screen. Amazon Inspector tracks and produces findings for software vulnerabilities in the vulnerability database. Amazon Inspector only supports CVEs with platforms listed in the **Detection Platforms** section of the CVE details screen. This section describes how to search the Amazon Inspector vulernability database using a CVE ID.

> **Note**
>
> Currently, CVE search doesn't support Microsoft Windows.

Searching the vulnerability database

This section describes how to search the vulnerability database in the console and with the Amazon Inspector API.

> **Note**
>
> You must activate Amazon Inspector in your current AWS Region before you can search the vulnerability database.

Console

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home
2. From the navigation pane, choose **Vulnerability database search**.
3. In the search bar, enter a CVE ID, and choose **Search**.

API

Run the Amazon Inspector SearchVulnerabilities API, and provide a single CVE ID as `filterCriteria` in the following format: `CVE-<year>-<ID>`.

Understanding CVE details

This section descibes how to interpet the CVE details page.

CVE details

The CVE details section includes the following information:

- CVE description and ID
- CVE Severity
- Common Vulnerability Scoring System (CVSS) and Exploit Prediction Scoring System (EPSS) scores
- Detection platforms

> **Note**
>
> If this field is empty, Amazon Inspector doesn't support detection for your CVE ID.

- Common Weakness Enumeration (CWE)
- Vendor created and updated dates

Vulnerability intelligence

The vulnerability intelligence section provides threat intelligence data like exploit targets and the last known public exploit date.

It also provides data from the Cybersecurity and Infrastructure Security Agency (CISA), which includes the remediation action, date the CVE was added to the Known Exploited Vulnerability catalog, and date time CISA expects federal agencies to remediate the CVE.

References

The references section provides links to resources for more information about the CVE.

Exporting SBOMs with Amazon Inspector

A software bill of materials (SBOM) is a nested inventory of all the open-source and third-party software components in your codebase. Amazon Inspector provides SBOMs for individual resources in your environment. You can use the Amazon Inspector console or Amazon Inspector API to generate SBOMs for your resources. You can export SBOMs for all resources that Amazon Inspector supports and monitors. Exported SBOMs provide information about your software supply. You can review the status of your resources by assessing the coverage of your AWS environment. This section describes how to configure and export SBOMs.

> **Note**
>
> Currently, Amazon Inspector doesn't support exporting SBOMs for Windows Amazon EC2 instances.

Amazon Inspector formats

Amazon Inspector supports exporting SBOMs in **CycloneDX 1.4** and **SPDX 2.3** compatible formats. Amazon Inspector exports SBOMs as JSON files to the Amazon S3 bucket you choose.

> **Note**
>
> SPDX format exports from Amazon Inspector are compatible with systems using **SPDX 2.3**, however they don't contain the Creative Commons Zero (CC0) field. This is because including this field would allow users to redistribute or edit the material.

Example of CycloneDX 1.4 SBOM format from Amazon Inspector


```
                {
"bomFormat": "CycloneDX",
"specVersion": "1.4",
"version": 1,
"metadata": {
  "timestamp": "2023-06-02T01:17:46Z",
  "component": null,
```

```
    "properties": [
      {
        "name": "imageId",
        "value":
 "sha256:c8ee97f7052776ef223080741f61fcdf6a3a9107810ea9649f904aa4269fdac6"
      },
      {
        "name": "architecture",
        "value": "arm64"
      },
      {
        "name": "accountId",
        "value": "111122223333"
      },
      {
        "name": "resourceType",
        "value": "AWS_ECR_CONTAINER_IMAGE"
      }
    ]
  },
  "components": [
    {
      "type": "library",
      "name": "pip",
      "purl": "pkg:pypi/pip@22.0.4?path=usr/local/lib/python3.8/site-packages/
pip-22.0.4.dist-info/METADATA",
      "bom-ref": "98dc550d1e9a0b24161daaa0d535c699"
    },
    {
      "type": "application",
      "name": "libss2",
      "purl": "pkg:dpkg/libss2@1.44.5-1+deb10u3?
arch=ARM64&epoch=0&upstream=libss2-1.44.5-1+deb10u3.src.dpkg",
      "bom-ref": "2f4d199d4ef9e2ae639b4f8d04a813a2"
    },
    {
      "type": "application",
      "name": "liblz4-1",
      "purl": "pkg:dpkg/liblz4-1@1.8.3-1+deb10u1?
arch=ARM64&epoch=0&upstream=liblz4-1-1.8.3-1+deb10u1.src.dpkg",
      "bom-ref": "9a6be8907ead891b070e60f5a7b7aa9a"
    },
    {
      "type": "application",
```

```
      "name": "mawk",
      "purl": "pkg:dpkg/mawk@1.3.3-17+b3?
arch=ARM64&epoch=0&upstream=mawk-1.3.3-17+b3.src.dpkg",
      "bom-ref": "c2015852a729f97fde924e62a16f78a5"
    },
    {
      "type": "application",
      "name": "libgmp10",
      "purl": "pkg:dpkg/libgmp10@6.1.2+dfsg-4+deb10u1?
arch=ARM64&epoch=2&upstream=libgmp10-6.1.2+dfsg-4+deb10u1.src.dpkg",
      "bom-ref": "52907290f5beef00dff8da77901b1085"
    },
    {
      "type": "application",
      "name": "ncurses-bin",
      "purl": "pkg:dpkg/ncurses-bin@6.1+20181013-2+deb10u3?
arch=ARM64&epoch=0&upstream=ncurses-bin-6.1+20181013-2+deb10u3.src.dpkg",
      "bom-ref": "cd20cfb9ebeeadba3809764376f43bce"
    }
  ],
  "vulnerabilities": [
    {
      "id": "CVE-2022-40897",
      "affects": [
        {
          "ref": "a74a4862cc654a2520ec56da0c81cdb3"
        },
        {
          "ref": "0119eb286405d780dc437e7dbf2f9d9d"
        }
      ]
    }
  ]
}
```


Example of SPDX 2.3 SBOM format from Amazon Inspector


```
{
 "name": "409870544328/EC2/i-022fba820db137c64/ami-074ea14c08effb2d8",
 "spdxVersion": "SPDX-2.3",
 "creationInfo": {
```

```
  "created": "2023-06-02T21:19:22Z",
  "creators": [
   "Organization: 409870544328",
   "Tool: Amazon Inspector SBOM Generator"
  ]
 },
 "documentNamespace": "EC2://i-022fba820db137c64/AMAZON_LINUX_2/null/x86_64",
 "comment": "",
 "packages": [{
   "name": "elfutils-libelf",
   "versionInfo": "0.176-2.amzn2",
   "downloadLocation": "NOASSERTION",
   "sourceInfo": "/var/lib/rpm/Packages",
   "filesAnalyzed": false,
   "externalRefs": [{
    "referenceCategory": "PACKAGE-MANAGER",
    "referenceType": "purl",
    "referenceLocator": "pkg:rpm/elfutils-libelf@0.176-2.amzn2?
arch=X86_64&epoch=0&upstream=elfutils-libelf-0.176-2.amzn2.src.rpm"
   }],
   "SPDXID": "SPDXRef-Package-rpm-elfutils-libelf-ddf56a513c0e76ab2ae3246d9a91c463"
  },
  {
   "name": "libcurl",
   "versionInfo": "7.79.1-1.amzn2.0.1",
   "downloadLocation": "NOASSERTION",
   "sourceInfo": "/var/lib/rpm/Packages",
   "filesAnalyzed": false,
   "externalRefs": [{
     "referenceCategory": "PACKAGE-MANAGER",
     "referenceType": "purl",
     "referenceLocator": "pkg:rpm/libcurl@7.79.1-1.amzn2.0.1?
arch=X86_64&epoch=0&upstream=libcurl-7.79.1-1.amzn2.0.1.src.rpm"
    },
    {
     "referenceCategory": "SECURITY",
     "referenceType": "vulnerability",
     "referenceLocator": "CVE-2022-32205"
    }
   ],
   "SPDXID": "SPDXRef-Package-rpm-libcurl-710fb33829bc5106559bcd380cddb7d5"
  },
  {
   "name": "hunspell-en-US",
```

```
   "versionInfo": "0.20121024-6.amzn2.0.1",
   "downloadLocation": "NOASSERTION",
   "sourceInfo": "/var/lib/rpm/Packages",
   "filesAnalyzed": false,
   "externalRefs": [{
    "referenceCategory": "PACKAGE-MANAGER",
    "referenceType": "purl",
    "referenceLocator": "pkg:rpm/hunspell-en-US@0.20121024-6.amzn2.0.1?
arch=NOARCH&epoch=0&upstream=hunspell-en-US-0.20121024-6.amzn2.0.1.src.rpm"
   }],
   "SPDXID": "SPDXRef-Package-rpm-hunspell-en-US-de19ae0883973d6cea5e7e079d544fe5"
  },
  {
   "name": "grub2-tools-minimal",
   "versionInfo": "2.06-2.amzn2.0.6",
   "downloadLocation": "NOASSERTION",
   "sourceInfo": "/var/lib/rpm/Packages",
   "filesAnalyzed": false,
   "externalRefs": [{
     "referenceCategory": "PACKAGE-MANAGER",
     "referenceType": "purl",
     "referenceLocator": "pkg:rpm/grub2-tools-minimal@2.06-2.amzn2.0.6?
arch=X86_64&epoch=1&upstream=grub2-tools-minimal-2.06-2.amzn2.0.6.src.rpm"
    },
    {
     "referenceCategory": "SECURITY",
     "referenceType": "vulnerability",
     "referenceLocator": "CVE-2021-3981"
    }
   ],
   "SPDXID": "SPDXRef-Package-rpm-grub2-tools-minimal-c56b7ea76e5a28ab8f232ef6d7564636"
  },
  {
   "name": "unixODBC-devel",
   "versionInfo": "2.3.1-14.amzn2",
   "downloadLocation": "NOASSERTION",
   "sourceInfo": "/var/lib/rpm/Packages",
   "filesAnalyzed": false,
   "externalRefs": [{
    "referenceCategory": "PACKAGE-MANAGER",
    "referenceType": "purl",
    "referenceLocator": "pkg:rpm/unixODBC-devel@2.3.1-14.amzn2?
arch=X86_64&epoch=0&upstream=unixODBC-devel-2.3.1-14.amzn2.src.rpm"
   }],
```

```
    "SPDXID": "SPDXRef-Package-rpm-unixODBC-devel-1bb35add92978df021a13fc9f81237d2"
   }
  ],
  "relationships": [{
    "spdxElementId": "SPDXRef-DOCUMENT",
    "relatedSpdxElement": "SPDXRef-Package-rpm-elfutils-libelf-
ddf56a513c0e76ab2ae3246d9a91c463",
    "relationshipType": "DESCRIBES"
   },
   {
    "spdxElementId": "SPDXRef-DOCUMENT",
    "relatedSpdxElement": "SPDXRef-Package-rpm-yajl-8476ce2db98b28cfab2b4484f84f1903",
    "relationshipType": "DESCRIBES"
   },
   {
    "spdxElementId": "SPDXRef-DOCUMENT",
    "relatedSpdxElement": "SPDXRef-Package-rpm-unixODBC-
devel-1bb35add92978df021a13fc9f81237d2",
    "relationshipType": "DESCRIBES"
   }
  ],
  "SPDXID": "SPDXRef-DOCUMENT"
}
```


Filters for SBOMs

When you export SBOMs you can include filters to create reports for specific subsets of resources. If you don't supply a filter the SBOMs for all active, supported resources are exported. And if you are a delegated administrator this includes resources for all members too. The following filters are available:

- **AccountID** — This filter can be used to export SBOMs for any resources associated with specific Account ID.
- **EC2 instance tag** — This filter can be used to export SBOMs for EC2 instances with specific tags.
- **Function name** — This filter can be used to export SBOMs for specific Lambda functions.
- **Image tag** — This filter can be used to export SBOMs for container images with specific tags.
- **Lambda function tag** — This filter can be used to export SBOMs for Lambda functions with specific tags.
- **Resource type** — This filter can be used to filter resource type: EC2/ECR/Lambda.

- **Resource ID** — This filter can be used to export an SBOM for a specific resource.
- **Repository name** —This filter can be used to generate SBOMs for container images in specific repositories.

Configure and export SBOMs

To export SBOMs, you must first configure an Amazon S3 bucket and a AWS KMS key that Amazon Inspector is allowed to use. You can use filters to export SBOMs for specific subsets of your resources. To export SBOMs for multiple accounts in an AWS Organization, follow these steps while signed in as the Amazon Inspector delegated administrator.

Prerequisites

- Supported resources that are being actively monitored by Amazon Inspector.
- An Amazon S3 bucket configured with a policy that allows Amazon Inspector to add object to. For information on configuring the policy see Configure export permissions.
- An AWS KMS key configured with a policy that allows Amazon Inspector to use to encrypt your reports. For information on configuring the policy see Configure an AWS KMS key for export.

> **Note**
>
> If you have previously configured an Amazon S3 bucket and an AWS KMS key for findings export you can use the same bucket and key for SBOM export.

Choose your preferred access method to export an SBOM.

Console

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. Using the AWS Region selector in the upper-right corner of the page, select the Region with the resources you want to export SBOM for.
3. In the navigation pane, choose **Export SBOMs**.
4. (Optional) In the **Export SBOMs** page, use the **Add filter** menu to select a subset of resources to create reports for. If no filter is provided Amazon Inspector will export reports

for all active resources. If you are a delegated administrator this will include all active resources in your organization.

5. Under **Export setting** select the format you want for the SBOM.
6. Enter an **Amazon S3 URI** or choose **Browse Amazon S3** to select an Amazon S3 location to store the SBOM.
7. Enter a **AWS KMS key** configured for Amazon Inspector to use to encrypt your reports.

API

- To export SBOMs for your resources programmatically, use the CreateSbomExport operation of the Amazon Inspector API.

  In your request, use the `reportFormat` parameter to specify the SBOM output format, choose `CYCLONEDX_1_4` or `SPDX_2_3`. The `s3Destination` parameter is required and you must specify an S3 bucket configured with a policy that allows Amazon Inspector to write to it. Optionally use `resourceFilterCriteria` parameters to limit the scope of the report to specific resources.

AWS CLI

- To export SBOMs for your resources using the AWS Command Line Interface run the following command:

  ```
  aws inspector2 create-sbom-export --report-format
  FORMAT --s3-destination bucketName=amzn-s3-demo-
  bucket1,keyPrefix=PREFIX,kmsKeyArn=arn:aws:kms:Region:111122223333:key/123
  ```

  In your request, replace *FORMAT* with the format of your choice, `CYCLONEDX_1_4` or `SPDX_2_3`. Then replace the *user input placeholders* for the s3 destination with the name of the S3 bucket to export to, the prefix to use for the output in S3, and the ARN for the KMS key you are using to encrypt the reports.

Amazon EventBridge event schema for Amazon Inspector events

Amazon EventBridge delivers a stream of real-time data from applications and other AWS services to targets, such as AWS Lambda functions, Amazon Simple Notification Service topics, and data streams in Amazon Kinesis Data Streams. To support integration with other applications, services, and systems, Amazon Inspector automatically publishes findings to EventBridge as events. You can use Amazon Inspector to publish events for findings, coverage, and scans. This section provides example schemas for EventBridge events.

Topics

Amazon EventBridge base schema for Amazon Inspector

The following is an example of the basic schema for an EventBridge event for Amazon Inspector. Event details differ based on the type of event.

```
{
    "version": "0",
    "id": "Event ID",
    "detail-type": "Inspector2 *event type*",
    "source": "aws.inspector2",
    "account": "AWS account ID (string)",
    "time": "event timestamp (string)",
    "region": "AWS Region (string)",
    "resources": [
        *IDs or ARNs of the resources involved in the event*
    ],
    "detail": {
        *Details of an Amazon Inspector event type*
    }
```

```
}
```

Amazon Inspector finding event schema example

The following includes examples of the schema for an EventBridge event for Amazon Inspector findings. Finding events are created when Amazon Inspector identifies a software vulnerability or network issue in one of your resources. For a guide to creating notifications in response to this type of event, see Creating custom responses to Amazon Inspector findings with Amazon EventBridge.

The following fields identify a finding event:

- `detail-type` is set to `Inspector2 Finding`.
- `detail` describes the finding.
- `detail.resources.tags` is where key-value data is stored.

You can filter the tabs to see finding event schemas for different resources and finding types.

Amazon EC2 package vulnerability finding

```
{
    "version": "0",
    "id": "4d621919-f1f4-4201-a0e2-37e4e330ff51",
    "detail-type": "Inspector2 Finding",
    "source": "aws.inspector2",
    "account": "123456789012",
    "time": "2024-09-04T17:00:36Z",
    "region": "eu-central-1",
    "resources": [
        "i-12345678901234567"
    ],
    "detail": {
        "awsAccountId": "123456789012",
        "description": "In snapd versions prior to 2.62, snapd failed to properly
 check the destination of symbolic links when extracting a snap. The snap format
 is a squashfs file-system image and so can contain symbolic links and other file
 types. Various file entries within the snap squashfs image (such as icons and
 desktop files etc) are directly read by snapd when it is extracted. An attacker who
 could convince a user to install a malicious snap which contained symbolic links
 at these paths could then cause snapd to write out the contents of the symbolic
```

```
 link destination into a world-readable directory. This in-turn could allow an
 unprivileged user to gain access to privileged information.",
        "epss": {
            "score": 0.00043
        },
        "exploitAvailable": "NO",
        "findingArn": "arn:aws:inspector2:eu-
central-1:123456789012:finding/FINDING_ID",
        "firstObservedAt": "Wed Sep 04 16:59:44.356 UTC 2024",
        "fixAvailable": "YES",
        "inspectorScore": 4.8,
        "inspectorScoreDetails": {
            "adjustedCvss": {
                "adjustments": [],
                "cvssSource": "UBUNTU_CVE",
                "score": 4.8,
                "scoreSource": "UBUNTU_CVE",
                "scoringVector": "CVSS:3.1/AV:L/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L",
                "version": "3.1"
            }
        },
        "lastObservedAt": "Wed Sep 04 16:59:44.476 UTC 2024",
        "packageVulnerabilityDetails": {
            "cvss": [
                {
                    "baseScore": 4.8,
                    "scoringVector": "CVSS:3.1/AV:L/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L",
                    "source": "UBUNTU_CVE",
                    "version": "3.1"
                },
                {
                    "baseScore": 7.3,
                    "scoringVector": "CVSS:3.1/AV:L/AC:L/PR:L/UI:R/S:U/C:H/I:H/A:H",
                    "source": "NVD",
                    "version": "3.1"
                }
            ],
            "referenceUrls": [
                "https://www.cve.org/CVERecord?id=CVE-2024-29069",
                "https://ubuntu.com/security/notices/USN-6940-1"
            ],
            "relatedVulnerabilities": [
                "USN-6940-1"
            ],
```

```
            "source": "UBUNTU_CVE",
            "sourceUrl": "https://people.canonical.com/~ubuntu-security/cve/2024/
CVE-2024-29069.html",
            "vendorCreatedAt": "Thu Jul 25 20:15:00.000 UTC 2024",
            "vendorSeverity": "medium",
            "vulnerabilityId": "CVE-2024-29069",
            "vulnerablePackages": [
                {
                    "arch": "ALL",
                    "epoch": 0,
                    "fixedInVersion": "0:2.63+22.04ubuntu0.1",
                    "name": "snapd",
                    "packageManager": "OS",
                    "remediation": "apt-get update && apt-get upgrade",
                    "version": "2.63"
                }
            ]
        },
        "remediation": {
            "recommendation": {
                "text": "None Provided"
            }
        },
        "resources": [
            {
                "details": {
                    "awsEc2Instance": {
                        "iamInstanceProfileArn":
 "arn:aws:iam::123456789012:instance-profile/AmazonSSMRoleForInstancesQuickSetup",
                        "imageId": "ami-02ff980600c693b38",
                        "ipV4Addresses": [
                            "1.23.456.789",
                            "123.45.67.890"
                        ],
                        "ipV6Addresses": [],
                        "launchedAt": "Wed Sep 04 16:57:40.000 UTC 2024",
                        "platform": "UBUNTU_22_04",
                        "subnetId": "subnet-12345678",
                        "type": "t2.small",
                        "vpcId": "vpc-12345678"
                    }
                },
                "id": "i-12345678901234567",
                "partition": "aws",
```

```
                "region": "eu-central-1",
                "type": "AWS_EC2_INSTANCE"
            }
        ],
        "severity": "MEDIUM",
        "status": "CLOSED",
        "title": "CVE-2024-29069 - snapd",
        "type": "PACKAGE_VULNERABILITY",
        "updatedAt": "Wed Sep 04 17:00:36.951 UTC 2024"
    }
}
```

Amazon EC2 network reachability finding

```
{
    "version": "0",
    "id": "9eb1603b-4263-19ec-8be2-33184694cb92",
    "detail-type": "Inspector2 Finding",
    "source": "aws.inspector2",
    "account": "123456789012",
    "time": "2024-09-05T13:06:56Z",
    "region": "eu-central-1",
    "resources": ["i-12345678901234567"],
    "detail": {
        "awsAccountId": "123456789012",
        "description": "On the instance i-12345678901234567, the port range
 22-22 is reachable from the InternetGateway igw-261bab4d from an attached ENI
 eni-094ad651219472857.",
        "findingArn": "arn:aws:inspector2:eu-
central-1:123456789012:finding/FINDING_ID",
        "firstObservedAt": "Thu Sep 05 13:06:56.334 UTC 2024",
        "lastObservedAt": "Thu Sep 05 13:06:56.334 UTC 2024",
        "networkReachabilityDetails": {
            "networkPath": {
                "steps": [{
                    "componentId": "igw-261bab4d",
                    "componentType": "AWS::EC2::InternetGateway"
                }, {
                    "componentId": "acl-171b527d",
                    "componentType": "AWS::EC2::NetworkAcl"
                }, {
```

```
                    "componentId": "sg-0d34debf87410f2d9",
                    "componentType": "AWS::EC2::SecurityGroup"
                }, {
                    "componentId": "eni-094ad651219472857",
                    "componentType": "AWS::EC2::NetworkInterface"
                }, {
                    "componentId": "i-12345678901234567",
                    "componentType": "AWS::EC2::Instance"
                }]
            },
            "openPortRange": {
                "begin": 22,
                "end": 22
            },
            "protocol": "TCP"
        },
        "remediation": {
            "recommendation": {
                "text": "You can restrict access to your instance by modifying the
 Security Groups or ACLs in the network path."
            }
        },
        "resources": [{
            "details": {
                "awsEc2Instance": {
                    "iamInstanceProfileArn": "arn:aws:iam::123456789012:instance-
profile/AmazonSSMRoleForInstancesQuickSetup",
                    "imageId": "ami-02ff980600c693b38",
                    "ipV4Addresses": ["1.23.456.789", "123.45.67.890"],
                    "ipV6Addresses": [],
                    "launchedAt": "Wed Sep 04 17:41:24.000 UTC 2024",
                    "platform": "UBUNTU_22_04",
                    "subnetId": "subnet-12345678",
                    "type": "t2.small",
                    "vpcId": "vpc-12345678"
                }
            },
            "id": "i-12345678901234567",
            "partition": "aws",
            "region": "eu-central-1",
            "type": "AWS_EC2_INSTANCE"
        }],
        "severity": "MEDIUM",
        "status": "ACTIVE",
```

```
        "title": "Port 22 is reachable from an Internet Gateway - TCP",
        "type": "NETWORK_REACHABILITY",
        "updatedAt": "Thu Sep 05 13:06:56.334 UTC 2024"
    }
}
```

Amazon ECR package vulnerability finding

```
{
    "version": "0",
    "id": "5325facf-a1aa-7d97-6bce-25fde6f6d2fc",
    "detail-type": "Inspector2 Finding",
    "source": "aws.inspector2",
    "account": "123456789012",
    "time": "2024-09-04T16:55:38Z",
    "region": "eu-central-1",
    "resources": [
        "arn:aws:ecr:eu-central-1:123456789012:repository/inspector2/
sha256:84f507df33c6864d49c296fb734192696e4cb6f78166ac51ac8b9b118181085d"
    ],
    "detail.resources.tags.testkey": "allow",
    "detail": {
        "awsAccountId": "123456789012",
        "description": "Possible denial of service in X.509 name checks",
        "epss": {
            "score": 0.00045
        },
        "exploitAvailable": "NO",
        "findingArn": "arn:aws:inspector2:eu-
central-1:123456789012:finding/FINDING_ID",
        "firstObservedAt": "Wed Sep 04 16:55:38.411 UTC 2024",
        "fixAvailable": "YES",
        "lastObservedAt": "Wed Sep 04 16:55:38.411 UTC 2024",
        "packageVulnerabilityDetails": {
            "cvss": [],
            "referenceUrls": [
                "https://www.cve.org/CVERecord?id=CVE-2024-6119",
                "https://ubuntu.com/security/notices/USN-6986-1"
            ],
            "relatedVulnerabilities": [
                "USN-6986-1"
```

```
            ],
            "source": "UBUNTU_CVE",
            "sourceUrl": "https://people.canonical.com/~ubuntu-security/cve/2024/
CVE-2024-6119.html",
            "vendorCreatedAt": "Tue Sep 03 00:00:00.000 UTC 2024",
            "vendorSeverity": "medium",
            "vulnerabilityId": "CVE-2024-6119",
            "vulnerablePackages": [
                {
                    "arch": "ARM64",
                    "epoch": 0,
                    "fixedInVersion": "0:3.0.13-0ubuntu3.4",
                    "name": "libssl3t64",
                    "packageManager": "OS",
                    "release": "0ubuntu3.2",
                    "remediation": "apt-get update && apt-get upgrade",
                    "sourceLayerHash":
 "sha256:1567e7ea90b67fc95ccdeeec39bdc3045098dee7e0c604975b957a9f8c0e9616",
                    "version": "3.0.13"
                },
                {
                    "arch": "ARM64",
                    "epoch": 0,
                    "fixedInVersion": "0:3.0.13-0ubuntu3.4",
                    "name": "openssl",
                    "packageManager": "OS",
                    "release": "0ubuntu3.2",
                    "remediation": "apt-get update && apt-get upgrade",
                    "sourceLayerHash":
 "sha256:1567e7ea90b67fc95ccdeeec39bdc3045098dee7e0c604975b957a9f8c0e9616",
                    "version": "3.0.13"
                }
            ]
        },
        "remediation": {
            "recommendation": {
                "text": "None Provided"
            }
        },
        "resources": [
            {
                "details": {
                    "awsEcrContainerImage": {
                        "architecture": "arm64",
```

```
                        "imageHash":
 "sha256:84f507df33c6864d49c296fb734192696e4cb6f78166ac51ac8b9b118181085d",
                        "imageTags": [
                            "ubuntu_latest"
                        ],
                        "platform": "UBUNTU_24_04",
                        "pushedAt": "Wed Sep 04 16:55:28.000 UTC 2024",
                        "registry": "123456789012",
                        "repositoryName": "inspector2"
                    }
                },
                "id": "arn:aws:ecr:eu-central-1:123456789012:repository/inspector2/
sha256:84f507df33c6864d49c296fb734192696e4cb6f78166ac51ac8b9b118181085d",
                "partition": "aws",
                "region": "eu-central-1",
                "type": "AWS_ECR_CONTAINER_IMAGE"
            }
        ],
        "severity": "MEDIUM",
        "status": "ACTIVE",
        "title": "CVE-2024-6119 - libssl3t64, openssl",
        "type": "PACKAGE_VULNERABILITY",
        "updatedAt": "Wed Sep 04 16:55:38.411 UTC 2024"
    }
}
```

Lambda package vulnerability finding

```
{
    "version": "0",
    "id": "9eadd71a-e49c-9864-6ba9-2a5d3f83c88f",
    "detail-type": "Inspector2 Finding",
    "source": "aws.inspector2",
    "account": "123456789012",
    "time": "2024-09-04T16:50:37Z",
    "region": "eu-central-1",
    "resources": [
        "arn:aws:lambda:eu-central-1:123456789012:function:VulnerableFunction:
$LATEST"
    ],
    "detail": {
```

```
        "awsAccountId": "123456789012",
        "description": "Flask is a lightweight WSGI web application framework. When
 all of the following conditions are met, a response containing data intended for
 one client may be cached and subsequently sent by the proxy to other clients. If
 the proxy also caches `Set-Cookie` headers, it may send one client's `session`
 cookie to other clients. The severity depends on the application's use of the
 session and the proxy's behavior regarding cookies. The risk depends on all these
 conditions being met.\n\n1. The application must be hosted behind a caching proxy
 that does not strip cookies or ignore responses with cookies. 2. The application
 sets `session.permanent = True` 3. The application does not access or modify the
 session at any point during a request. 4. `SESSION_REFRESH_EACH_REQUEST` enabled
 (the default). 5. The application does not set a `Cache-Control` header to indicate
 that a page is private or should not be cached.\n\nThis happens because vulnerable
 versions of Flask only set the `Vary: Cookie` header when the session is ac",
        "epss": {
            "score": 0.00208
        },
        "exploitAvailable": "YES",
        "exploitabilityDetails": {
            "lastKnownExploitAt": "Sat Aug 31 00:04:50.000 UTC 2024"
        },
        "findingArn": "arn:aws:inspector2:eu-
central-1:123456789012:finding/FINDING_ID",
        "firstObservedAt": "Wed Sep 04 16:50:37.627 UTC 2024",
        "fixAvailable": "YES",
        "inspectorScore": 7.5,
        "inspectorScoreDetails": {
            "adjustedCvss": {
                "cvssSource": "NVD",
                "score": 7.5,
                "scoreSource": "NVD",
                "scoringVector": "CVSS:3.1/AV:N/AC:L/PR:N/UI:N/S:U/C:H/I:N/A:N",
                "version": "3.1"
            }
        },
        "lastObservedAt": "Wed Sep 04 16:50:37.627 UTC 2024",
        "packageVulnerabilityDetails": {
            "cvss": [
                {
                    "baseScore": 7.5,
                    "scoringVector": "CVSS:3.1/AV:N/AC:L/PR:N/UI:N/S:U/C:H/I:N/A:N",
                    "source": "NVD",
                    "version": "3.1"
                }
```

```
            ],
            "referenceUrls": [
                "https://www.debian.org/security/2023/dsa-5442",
                "https://lists.debian.org/debian-lts-announce/2023/08/msg00024.html"
            ],
            "relatedVulnerabilities": [],
            "source": "NVD",
            "sourceUrl": "https://nvd.nist.gov/vuln/detail/CVE-2023-30861",
            "vendorCreatedAt": "Tue May 02 18:15:52.000 UTC 2023",
            "vendorSeverity": "HIGH",
            "vendorUpdatedAt": "Sun Aug 20 21:15:09.000 UTC 2023",
            "vulnerabilityId": "CVE-2023-30861",
            "vulnerablePackages": [
                {
                    "epoch": 0,
                    "filePath": "requirements.txt",
                    "fixedInVersion": "2.3.2",
                    "name": "flask",
                    "packageManager": "PIP",
                    "version": "2.0.0"
                }
            ]
        },
        "remediation": {
            "recommendation": {
                "text": "None Provided"
            }
        },
        "resources": [
            {
                "details": {
                    "awsLambdaFunction": {
                        "architectures": [
                            "X86_64"
                        ],
                        "codeSha256": "O7jkFEmfPB+CK3Y6Pby5zW9gjG
+zusAaqRRMGS8B27c=",
                        "executionRoleArn": "arn:aws:iam::123456789012:role/service-
role/VulnerableFunction-role-f9vs5mq8",
                        "functionName": "VulnerableFunction",
                        "lastModifiedAt": "Wed Sep 04 16:50:20.000 UTC 2024",
                        "packageType": "ZIP",
                        "runtime": "PYTHON_3_11",
                        "version": "$LATEST"
```

```
                    }
                },
                "id": "arn:aws:lambda:eu-
central-1:123456789012:function:VulnerableFunction:$LATEST",
                "partition": "aws",
                "region": "eu-central-1",
                "type": "AWS_LAMBDA_FUNCTION"
            }
        ],
        "severity": "HIGH",
        "status": "ACTIVE",
        "title": "CVE-2023-30861 - flask",
        "type": "PACKAGE_VULNERABILITY",
        "updatedAt": "Wed Sep 04 16:50:37.627 UTC 2024"
    }
}
```

Lambda code vulnerability finding

```
{
    "version": "0",
    "id": "e764f7be-f931-ff1b-204b-8cab2d91724b",
    "detail-type": "Inspector2 Finding",
    "source": "aws.inspector2",
    "account": "123456789012",
    "time": "2024-09-04T16:51:01Z",
    "region": "eu-central-1",
    "resources": [
        "arn:aws:lambda:eu-central-1:123456789012:function:VulnerableFunction:
$LATEST"
    ],
    "detail": {
        "awsAccountId": "123456789012",
        "codeVulnerabilityDetails": {
            "cwes": [
                "CWE-798"
            ],
            "detectorId": "python/hardcoded-credentials@v1.0",
            "detectorName": "Hardcoded credentials",
            "detectorTags": [
                "secrets",
```

```
                "security",
                "owasp-top10",
                "top25-cwes",
                "cwe-798",
                "Python"
            ],
            "filePath": {
                "endLine": 6,
                "fileName": "lambda_function.py",
                "filePath": "lambda_function.py",
                "startLine": 6
            },
            "ruleId": "python-detect-hardcoded-aws-credentials"
        },
        "description": "Access credentials, such as passwords and access keys,
 should not be hardcoded in source code. Hardcoding credentials may cause leaks even
 after removing them. This is because version control systems might retain older
 versions of the code. Credentials should be stored securely and obtained from the
 runtime environment.",
        "findingArn": "arn:aws:inspector2:eu-
central-1:123456789012:finding/FINDING_ID",
        "firstObservedAt": "Wed Sep 04 16:51:01.869 UTC 2024",
        "lastObservedAt": "Wed Sep 04 16:51:01.869 UTC 2024",
        "remediation": {
            "recommendation": {
                "text": "Your code uses hardcoded AWS credentials which might
 allow unauthorized users access to your AWS account. These attacks can occur
 a long time after the credentials are removed from the code. We recommend that
 you set AWS credentials with environment variables or an AWS profile instead.
 You should consider deleting the affected account or rotating the secret key
 and then monitoring Amazon CloudWatch for unexpected activity.\n[https://
boto3.amazonaws.com/v1/documentation/api/latest/guide/credentials.html](https://
boto3.amazonaws.com/v1/documentation/api/latest/guide/credentials.html)"
            }
        },
        "resources": [
            {
                "details": {
                    "awsLambdaFunction": {
                        "architectures": [
                            "X86_64"
                        ],
                        "codeSha256": "O7jkFEmfPB+CK3Y6Pby5zW9gjG
+zusAaqRRMGS8B27c=",
```

```
                        "executionRoleArn": "arn:aws:iam::123456789012:role/service-
role/VulnerableFunction-role-f9vs5mq8",
                        "functionName": "VulnerableFunction",
                        "lastModifiedAt": "Wed Sep 04 16:50:20.000 UTC 2024",
                        "packageType": "ZIP",
                        "runtime": "PYTHON_3_11",
                        "version": "$LATEST"
                    }
                },
                "id": "arn:aws:lambda:eu-
central-1:123456789012:function:VulnerableFunction:$LATEST",
                "partition": "aws",
                "region": "eu-central-1",
                "type": "AWS_LAMBDA_FUNCTION"
            }
        ],
        "severity": "CRITICAL",
        "status": "ACTIVE",
        "title": "CWE-798 - Hardcoded credentials",
        "type": "CODE_VULNERABILITY",
        "updatedAt": "Wed Sep 04 16:51:01.869 UTC 2024"
    }
}
```


Note

The detail value returns the JSON details of a single finding as an object. It does not return the entire findings response syntax, which supports multiple findings within an array.

Amazon Inspector initial scan complete event schema example

The following is an example of the EventBridge event schema for an Amazon Inspector event for completing an initial scan. This event is created when Amazon Inspector completes an initial scan of one of your resources.

The following fields identify an initial scan complete event:

- The `detail-type` field is set to `Inspector2 Scan`.

- The `detail` object contains a `finding-severity-counts` object that details the number of findings in the applicable severity categories, such as `CRITICAL`, `HIGH`, and `MEDIUM`.

Select from the options to see different initial scan event schemas by resource type.

Amazon EC2 instance initial scan


```
{
    "version": "0",
    "id": "28a46762-6ac8-6cc4-4f55-bc9ab99af928",
    "detail-type": "Inspector2 Scan",
    "source": "aws.inspector2",
    "account": "111122223333",
    "time": "2023-01-20T22:52:35Z",
    "region": "us-east-1",
    "resources": [
        "i-087d63509b8c97098"
    ],
    "detail": {
        "scan-status": "INITIAL_SCAN_COMPLETE",
        "finding-severity-counts": {
            "CRITICAL": 0,
            "HIGH": 0,
            "MEDIUM": 0,
            "TOTAL": 0
        },
        "instance-id": "i-087d63509b8c97098",
        "version": "1.0"
    }
}
```


Amazon ECR image initial scan


```
{
    "version": "0",
    "id": "fdaa751a-984c-a709-44f9-9a9da9cd3606",
    "detail-type": "Inspector2 Scan",
    "source": "aws.inspector2",
    "account": "111122223333",
```

```
    "time": "2023-01-20T23:15:18Z",
    "region": "us-east-1",
    "resources": [
        "arn:aws:ecr:us-east-1:111122223333:repository/inspector2"
    ],
    "detail": {
        "scan-status": "INITIAL_SCAN_COMPLETE",
        "repository-name": "arn:aws:ecr:us-east-1:111122223333:repository/
inspector2",
        "finding-severity-counts": {
            "CRITICAL": 0,
            "HIGH": 0,
            "MEDIUM": 0,
            "TOTAL": 0
        },
        "image-digest":
 "sha256:965fbcae990b0467ed5657caceaec165018ef44a4d2d46c7cdea80a9dff0d1ea",
        "image-tags": [
            "ubuntu22"
        ],
        "version": "1.0"
    }
}
```

Lambda function initial scan

```
{
  "version": "0",
  "id": "4f290a7c-361b-c442-03c8-a629f6f20d6c",
  "detail-type": "Inspector2 Scan",
  "source": "aws.inspector2",
  "account": "111122223333",
  "time": "2023-02-23T18:06:03Z",
  "region": "us-west-2",
  "resources": [
    "arn:aws:lambda:us-west-2:111122223333:function:lambda-example:$LATEST"
  ],
  "detail": {
    "scan-status": "INITIAL_SCAN_COMPLETE",
    "finding-severity-counts": {
```

```
      "CRITICAL": 0,
      "HIGH": 0,
      "MEDIUM": 0,
      "TOTAL": 0
    },
    "version": "1.0"
  }
}
```

Amazon Inspector coverage event schema example

The following is an example of the EventBridge event schema for an Amazon Inspector event for coverage. This event is created when Amazon Inspector scan coverage for a resource is changed. The following fields identify a coverage event:

- The `detail-type` field is set to `Inspector2 Coverage`.
- The `detail` object contains a `scanStatus` object that indicates the new scanning status for the resource.

```
{
    "version": "0",
    "id": "000adda5-0fbf-913e-bc0e-10f0376412aa",
    "detail-type": "Inspector2 Coverage",
    "source": "aws.inspector2",
    "account": "111122223333",
    "time": "2023-01-20T22:51:39Z",
    "region": "us-east-1",
    "resources": [
        "i-087d63509b8c97098"
    ],
    "detail": {
        "scanStatus": {
            "reason": "UNMANAGED_EC2_INSTANCE",
            "statusCodeValue": "INACTIVE"
        },
        "scanType": "PACKAGE",
        "eventTimestamp": "2023-01-20T22:51:35.665501Z",
```

```
        "version": "1.0"
    }
}
```

Amazon Inspector auto enable schema example

The auto-enable event is sent to the delegated admin when Amazon Inspector is unable to support the number of members in an organization. The following fields identify an auto-enable event:

- The `detail-type` field is set to `Inspector2 AutoEnable`.
- The `detail` object describes why the auto enable event failed.

```
{
    "version": "0",
    "id": "85fc3613-e913-7fc4-a80c-a3753e4aa9ae",
    "detail-type": "Inspector2 AutoEnable",
    "source": "aws.inspector2",
    "account": "123456789012",
    "time": "2024-08-21T02:36:48Z",
    "region": "us-east-1",
    "detail": {
        “version”: “1.0.0”,
        “AutoEnableStatus”: “Failed”,
        “Reason”: "The number of member accounts enabled with AWS Inspector has reached
 the maximum limit of 10,000"
        }
}
```

The Amazon Inspector SSM plugin for Linux and Windows

This topic describes the Amazon Inspector SSM plugin for Linux and Windows instances.

The Amazon Inspector SSM plugin for Linux

Amazon Inspector uses the Amazon Inspector SSM plugin to perform deep inspection scans on Linux instances. The Amazon Inspector SSM plugin is automatically installed on Linux instances in the `/opt/aws/inspector/bin` directory. The name of the executable is `inspectorssmplugin`.

Amazon Inspector uses Systems Manager Distributor to deploy the plugin on your instance. To perform deep inspection scans, Systems Manager Distributor and Amazon Inspector must support your Amazon EC2 instance operating system. For information about operating systems that Systems Manager Distributor supports, see Supported package platforms and architectures in the *AWS Systems Manager User Guide*.

Amazon Inspector creates file directories to manage data collected for deep inspection by the Amazon Inspector SSM plugin. These file directories include `/opt/aws/inspector/var/input` and `/opt/aws/inspector/var/output`.

The `packages.txt` file in `/opt/aws/inspector/var/output` stores the full paths to packages that deep inspection discovers. If Amazon Inspector detects the same package multiple times on your instance, the `packages.txt` file lists each location where the package was found.

Amazon Inspector stores logs for the plugin in the `/var/log/amazon/inspector` directory.

Uninstalling the Amazon Inspector SSM plugin

If the `inspectorssmplugin` file is inadvertently deleted, the SSM association `InspectorLinuxDistributor-do-not-delete` will try to reinstall the `inspectorssmplugin` file at the next scan interval.

If you deactivate Amazon EC2 scanning, the plugin will be automatically uninstalled from all Linux hosts.

The Amazon Inspector SSM plugin for Windows

The Amazon Inspector SSM plugin is required for Amazon Inspector to scan your Windows instances. The Amazon Inspector SSM plugin is automatically installed on your Windows instances in `C:\Program Files\Amazon\Inspector`, and the executable binary file is named `InspectorSsmPlugin.exe`.

The following file locations are created to store data the Amazon Inspector SSM plugin collects:

- `C:\ProgramData\Amazon\Inspector\Input`
- `C:\ProgramData\Amazon\Inspector\Output`
- `C:\ProgramData\Amazon\Inspector\Logs`

Note

By default, the Amazon Inspector SSM plugin runs at below normal priority.

Note

You can use Windows instances with the Default Host Management Configuration setting. However, you must create or use a role that's configured with the `ssm:PutInventory` and `ssm:GetParameter` permissions.

Uninstalling the Amazon Inspector SSM plugin

If the `InspectorSsmPlugin.exe` file is inadvertently deleted, the `InspectorDistributor-do-not-delete` association will reinstall the `InspectorSsmPlugin.exe` file at the next Windows scan interval. If you want to uninstall the Amazon Inspector SSM plugin, you can use the **Uninstall** action in the `AmazonInspector2-ConfigureInspectorSsmPlugin` document. However, the Amazon Inspector SSM plugin will be automatically uninstalled from all Windows hosts if you deactivate Amazon EC2 scanning.

Note

If you uninstall the SSM Agent before deactivating Amazon Inspector, the Amazon Inspector SSM plugin will remain on the Windows host, but will not send data to the Amazon Inspector SSM plugin. For more information, see Deactivating Amazon Inspector.

Amazon Inspector SBOM Generator

A Software Bill of Materials (SBOM) is a formally structured list of components, libraries, and modules required to build a piece of software. The Amazon Inspector SBOM Generator (Sbomgen) is a tool that produces an SBOM for archives, container images, directories, local systems, and compiled Go and Rust binaries. Sbomgen scans for files that contain information about installed packages. When Sbomgen finds a relevant file, it extracts package names, versions, and other metadata. Sbomgen then transforms package metadata into a CycloneDX SBOM. You can use Sbomgen to generate the CycloneDX SBOM as a file or in STDOUT and send SBOMs to Amazon Inspector for vulnerability detection. You can also use Sbomgen as part of the CI/CD integration, which scans container images automatically as part of your deployment pipeline.

Supported packages types

Sbomgen collects inventory for the following package types:

- Alpine APK
- Debian/Ubuntu DPKG
- Red Hat RPM
- C#
- Go
- Java
- Node.js
- PHP
- Python
- Ruby
- Rust

Supported container image configuration checks

Sbomgen can scan standalone Dockerfiles and build history from exisiting images for security issues. For more information, see Amazon Inspector Dockerfile checks.

Installing Sbomgen

Sbomgen is only available for Linux operating systems.

You must have Docker installed if you want Sbomgen to analyze locally cached images. Docker isn't required to analyze images exported as `.tar` files or images hosted in remote container registries.

Amazon Inspector recommends that you run Sbomgen from a system with at least the following hardware specs:

- 4x core CPU
- 8 GB RAM

To install Sbomgen

1. Download the latest Sbomgen zip file from the correct URL for your architecture:

   Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/latest/linux/amd64/inspector-sbomgen.zip

   Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/latest/linux/arm64/inspector-sbomgen.zip

   Alternatively, you can download previous versions of the Amazon Inspector SBOM Generator zip file.
2. Unzip the download using the following command:

   ```
   unzip inspector-sbomgen.zip
   ```
3. Check for the following files in the extracted directory:

   - `inspector-sbomgen` – This is the tool you will execute to generate SBOMs.
   - `README.txt` – This is the documentation for using Sbomgen.
   - `LICENSE.txt` – This file contains the software license for Sbomgen.
   - `licenses` – This folder contains license info for third party packages used by Sbomgen.
   - `checksums.txt` – This file provides hashes of the Sbomgen tool.
   - `sbom.json` – This is a CycloneDX SBOM for the Sbomgen tool.

- `WhatsNew.txt` – This file contains a summarized change log, so you can view major changes and improvements between Sbomgen versions quickly.

4. (Optional) Verify the authenticity and integrity of the tool using the following command:

   ```
   sha256sum < inspector-sbomgen
   ```

   - Compare the results with the contents of the `checksums.txt` file.

5. Grant executable permissions to the tool using the following command:

   ```
   chmod +x inspector-sbomgen
   ```

6. Verify that Sbomgen is successfully installed using the following command:

   ```
   ./inspector-sbomgen --version
   ```

   You should see the output similar to the following:

   ```
   Version: 1.X.X
   ```

Using Sbomgen

This section describes different ways you can use Sbomgen. You can learn more about how to use Sbomgen through built-in examples. To view these examples, run the `list-examples` command:

```
./inspector-sbomgen list-examples
```

Generate an SBOM for a container image and output the result

You can use Sbomgen to generate SBOMs for container images and output the result to a file. This capability can be enabled using the `container` subcommand.

Example command

In the following snippet, you can replace *`image:tag`* with the ID of your image and *`output_path.json`* with the path to the output you want to save.

```
# generate SBOM for container image
./inspector-sbomgen container --image image:tag -o output_path.json
```

> **Note**
>
> Scan time and performance depends on the image size and how small the number of layers are. Smaller images not only improve Sbomgen performance, but also reduce the potential attack surface. Smaller images also improve image build, download, and upload times.

When using Sbomgen with `ScanSbom`, the Amazon Inspector Scan API won't process SBOMs that contain more than 5,000 packages. In this scenario, the Amazon Inspector Scan API returns an HTTP 400 response.

If an image includes bulk media files or directories, consider excluding them from Sbomgen using the `--skip-files` argument.

Example: Common error cases

Container image scanning can fail due to the following errors:

- `InvalidImageFormat` – Occurs when scanning malformed container images with corrupt TAR headers, manifest files, or config files .
- `ImageValidationFailure` – Occurs when checksum or content-length validation fails for container image components, such as mismatched Content-Length headers, incorrect manifest digests, or failed SHA256 checksum verification.
- `ErrUnsupportedMediaType` – Occurs when image components include unsupported media types. For information about supported media types, see Supported operating systems and media types.

Amazon Inspector does not support the `application/vnd.docker.distribution.manifest.list.v2+json` media type. However, Amazon Inspector does support manifest lists. When scanning images that use manifest lists, you can explicitly specify which platform to use with the `--platform` argument. If the `--platform` argument is not specified, the Amazon Inspector SBOM Generator automatically selects the manifest based on the platform where its running.

Generate an SBOM from directories and archives

You can use Sbomgen to generate SBOMs from directories and archives. This capability can be enabled using the `directory` or `archive` subcommands. Amazon Inspector recommends using

this feature when you want to generate an SBOM from a project folder, such as a downloaded git repository.

Example command 1

The following snippet shows a subcommand that generates an SBOM from a directory file.

```
# generate SBOM from directory
./inspector-sbomgen directory --path /path/to/dir -o /tmp/sbom.json
```

Example command 2

The following snippet shows a subcommand that generates an SBOM from an archive file. The only supported archive formats are `.zip`, `.tar`, and `.tar.gz`.

```
# generate SBOM from archive file (tar, tar.gz, and zip formats only)
./inspector-sbomgen archive --path testData.zip -o /tmp/sbom.json
```

Generate an SBOM from Go or Rust compiled binaries

You can use Sbomgen to generate SBOMs from compiled Go and Rust binaries. You can enable this cabapility through the `binary` subcommand:

```
./inspector-sbomgen binary --path /path/to/your/binary
```

Generate an SBOM from mounted volumes

You can use Amazon Inspector SBOM Generator to generate SBOMs from mounted volumes. This capability can be enabled using the `volume` subcommand. We recommend using this feature when you want to analyze storage volumes, such as Amazon EBS volumes that have been mounted to your system. Unlike the directory subcommand, mounted volume scanning detects OS packages and OS information.

You can scan an Amazon EBS volume by attaching it to an Amazon EC2 instance where Amazon Inspector SBOM Generator is installed and mounting it on that instance. For Amazon EBS volumes that are currently in use by other Amazon EC2 instances, you can create an Amazon EBS snapshot of the volume and then create a new Amazon EBS volume from that snapshot for scanning purposes. For more information about Amazon EBS, see What is Amazon EBS? in the *Amazon Elastic Block Store User Guide*.

Example command

The following snippet shows a subcommand that generates an SBOM from a mounted volume. The `--path` argument should specify the root directory where the volume is mounted.

```
# generate SBOM from mounted volume
./inspector-sbomgen volume --path /mount/point/of/volume/root
```

Example command

The following snippet shows a subcommand that generates an SBOM from a mounted volume while excluding specific file paths with the `--exclude-suffix` argument. The `--exclude-suffix` argument is particularly useful when a volume contains bulk files (such as log files or media files). Files and directories whose paths end with the specified suffixes will be excluded from scanning, which can reduce scan time and memory usage.

```
# generate SBOM from mounted volume with exclusions
./inspector-sbomgen volume --path /mount/point/of/volume/root \
--exclude-suffix .log \
--exclude-suffix cache
```

All file paths in the target volume are normalized to their original paths. For example, when scanning a volume mounted at `/mnt/volume` that contains a file at `/mnt/volume/var/lib/rpm/rpmdb.sqlite`, the path will be normalized to `/var/lib/rpm/rpmdb.sqlite` in the generated SBOM.

Send an SBOM to Amazon Inspector for vulnerability identification

In addition to generating an SBOM, you can send an SBOM for scanning with a single command from the Amazon Inspector Scan API. Amazon Inspector evaluates the contents of the SBOM for vulnerabilites before returning findings to Sbomgen. Depending on your input, the findings can be displayed or written to a file.

> **Note**
>
> You must have an active AWS account with read permissions to `InspectorScan-ScanSbom` to use this capability.

To enable this capability, you pass the `--scan-sbom` argument to the Sbomgen CLI. You can also pass the `--scan-sbom` argument to any of the following Sbomgen subcommands: `archive`, `binary`, `container`, `directory`, `localhost`.

> **Note**
>
> The Amazon Inspector Scan API doesn't process SBOMs with more than 2,000 packages. In this scenario, the Amazon Inspector Scan API returns an HTTP 400 response.

You can authenticate to Amazon Inspector through an AWS profile or an IAM role with the following AWS CLI arguments:

```
--aws-profile profile
--aws-region region
--aws-iam-role-arn role_arn
```

You can also authenticate to Amazon Inspector by providing the following environment variables to Sbomgen.

```
AWS_ACCESS_KEY_ID=$access_key \
AWS_SECRET_ACCESS_KEY=$secret_key \
AWS_DEFAULT_REGION=$region \
./inspector-sbomgen arguments
```

To specify the response format, use the `--scan-sbom-output-format cyclonedx` argument or `--scan-sbom-output-format inspector` argument.

Example command 1

This command creates an SBOM for the latest Alpine Linux release, scans the SBOM, and writes the vulnerability results to a JSON file.

```
./inspector-sbomgen container --image alpine:latest \
                          --scan-sbom \
```

```
                          --aws-profile your_profile \
                          --aws-region your_region \
                          --scan-sbom-output-format cyclonedx \
                          --outfile /tmp/inspector_scan.json
```

Example command 2

This command authenticates to Amazon Inspector using AWS credentials as environment variables.

```
AWS_ACCESS_KEY_ID=$your_access_key \
AWS_SECRET_ACCESS_KEY=$your_secret_key \
AWS_DEFAULT_REGION=$your_region \
./inspector-sbomgen container --image alpine:latest \
                          -o /tmp/sbom.json \
                          --scan-sbom \
                          --scan-sbom-output-format inspector
```

Example command 3

This command authenticates to Amazon Inspector using the ARN for an IAM role.

```
./inspector-sbomgen container --image alpine:latest \
                          --scan-sbom \
                          --aws-profile your_profile \
                          --aws-region your_region \
                          --outfile /tmp/inspector_scan.json
                          --aws-iam-role-arn arn:aws:iam::123456789012:role/your_role
```

Use additional scanners to enhance detection capabilities

The Amazon Inspector SBOM Generator applies predefined scanners based on the command being used.

Default scanner groups

Each Amazon Inspector SBOM Generator subcommand applies the following default scanner groups automatically.

- For the `directory` subcommand: binary, programming-language-packages, dockerfile scanner groups

- For the `localhost` subcommand: os, programming-language-packages, extra-ecosystems scanner groups
- For the `container` subcommand: os, programming-language-packages, extra-ecosystems, dockerfile, binary scanner groups

Special scanners

To include scanners beyond the default scanner groups, use the `--additional-scanners` option followed by the name of the scanner to be added. The following is an example command showing how to do this.

```
# Add WordPress installation scanner to directory scan
./inspector-sbomgen directory --path /path/to/directory/ --additional-scanners
 wordpress-installation -o output.json
```

The following is an example command showing how to add multiple scanners with a comma-separated list.

```
./inspector-sbomgen container --image image:tag --additional-scanners scanner1,scanner2
 -o output.json
```

Optimize container scans by adjusting maximum file size to scan

When you analyze and process a container image, Sbomgen scans files that are 200 MB or less by default. Files larger than 200 MB rarely contain package metadata. You can encounter misses when you inventory a Go or Rust binary that exceeds 200MB. To adjust the size limit, use the `--max-file-size` argument. This allows you to increase the limit to include large files and decrease the limit to reduce resource usage by excluding large files.

Example

The following example shows how to use the `--max-file-size` argument to increase the file size.

```
# Increase the file size limit to scan files up to 300 MB
```

```
./inspector-sbomgen container --image alpine:latest \
--outfile /tmp/sbom.json \
--max-file-size 300000000
```

Adjusting this setting helps control disk usage, memory consumption, and overall scan duration.

Disable progress indicator

Sbomgen displays a spinning progress indicator that can result in excessive slash characters in CI/CD environments.

```
INFO[2024-02-01 14:58:46]coreV1.go:53: analyzing artifact
|
\
/
|
\
/
INFO[2024-02-01 14:58:46]coreV1.go:62: executing post-processors
```

You can disable the progress indicator using the `--disable-progress-bar` arguement:

```
./inspector-sbomgen container --image alpine:latest \
--outfile /tmp/sbom.json \
--disable-progress-bar
```

Authenticating to private registries with Sbomgen

By providing your private registry authentication credentials, you can generate SBOMs from containers that are hosted in private registries. You can provide these credentials through the following methods:

Authenticate using cached credentials (recommended)

For this method, you authenticate to your container registry. For example, if using Docker, you can authenticate to your container registry using the Docker loging command: `docker login`.

1. Authenticate to your container registry. For example, if using Docker, you can authenticate to your registry using the Docker `login` command:

2. After you authenticate to your container registry, use Sbomgen on a container image that's in the registry. To use the following example, replace *image:tag* with the name of the image to scan:

```
./inspector-sbomgen container --image image:tag
```

Authenticate using the interactive method

For this method, provide your username as a parameter, and Sbomgen will prompt you for secure password entry when needed.

To use the following example, replace *image:tag* with the name of the image that you want to scan and *your_username* with a username that has access to the image:

```
./inspector-sbomgen container --image image:tag --username your_username
```

Authenticate using the non-interactive method

For this method, store your password or registry token in a `.txt` file.

> **Note**
>
> The current user should only be able to read this file. The file should also contain your password or token on a single line.

To use the following example, replace *your_username* with your username, *password.txt* with the `.txt` file that includes your password or token on a single line, and *image:tag* with the name of the image to scan:

```
INSPECTOR_SBOMGEN_USERNAME=your_username \
INSPECTOR_SBOMGEN_PASSWORD=`cat password.txt` \
./inspector-sbomgen container --image image:tag
```

Example outputs from Sbomgen

The following is an example of an SBOM for a container image inventoried using Sbomgen.

Container image SBOM


```
{
  "bomFormat": "CycloneDX",
  "specVersion": "1.5",
  "serialNumber": "urn:uuid:828875ef-8c32-4777-b688-0af96f3cf619",
  "version": 1,
  "metadata": {
    "timestamp": "2023-11-17T21:36:38Z",
    "tools": [
      {
        "vendor": "Amazon Web Services, Inc. (AWS)",
        "name": "Amazon Inspector SBOM Generator",
        "version": "1.0.0",
        "hashes": [
          {
            "alg": "SHA-256",
            "content":
 "10ab669cfc99774786301a745165b5957c92ed9562d19972fbf344d4393b5eb1"
          }
        ]
      }
    ],
    "component": {
      "bom-ref": "comp-1",
      "type": "container",
      "name": "fedora:latest",
      "properties": [
        {
          "name": "amazon:inspector:sbom_generator:image_id",
          "value":
 "sha256:c81c8ae4dda7dedc0711daefe4076d33a88a69a28c398688090c1141eff17e50"
        },
        {
          "name": "amazon:inspector:sbom_generator:layer_diff_id",
          "value":
 "sha256:eddd0d48c295dc168d0710f70364581bd84b1dda6bb386c4a4de0b61de2f2119"
        }
      ]
    }
  },
  "components": [
    {
```

```
      "bom-ref": "comp-2",
      "type": "library",
      "name": "dnf",
      "version": "4.18.0",
      "purl": "pkg:pypi/dnf@4.18.0",
      "properties": [
        {
          "name": "amazon:inspector:sbom_generator:source_file_scanner",
          "value": "python-pkg"
        },
        {
          "name": "amazon:inspector:sbom_generator:source_package_collector",
          "value": "python-pkg"
        },
        {
          "name": "amazon:inspector:sbom_generator:source_path",
          "value": "/usr/lib/python3.12/site-packages/dnf-4.18.0.dist-info/METADATA"
        },
        {
          "name": "amazon:inspector:sbom_generator:is_duplicate_package",
          "value": "true"
        },
        {
          "name": "amazon:inspector:sbom_generator:duplicate_purl",
          "value": "pkg:rpm/fedora/python3-dnf@4.18.0-2.fc39?
arch=noarch&distro=39&epoch=0"
        }
      ]
    },
    {
      "bom-ref": "comp-3",
      "type": "library",
      "name": "libcomps",
      "version": "0.1.20",
      "purl": "pkg:pypi/libcomps@0.1.20",
      "properties": [
        {
          "name": "amazon:inspector:sbom_generator:source_file_scanner",
          "value": "python-pkg"
        },
        {
          "name": "amazon:inspector:sbom_generator:source_package_collector",
          "value": "python-pkg"
        },
```

```
        {
          "name": "amazon:inspector:sbom_generator:source_path",
          "value": "/usr/lib64/python3.12/site-packages/libcomps-0.1.20-py3.12.egg-
info/PKG-INFO"
        },
        {
          "name": "amazon:inspector:sbom_generator:is_duplicate_package",
          "value": "true"
        },
        {
          "name": "amazon:inspector:sbom_generator:duplicate_purl",
          "value": "pkg:rpm/fedora/python3-libcomps@0.1.20-1.fc39?
arch=x86_64&distro=39&epoch=0"
        }
      ]
    }
  ]
}
```

Previous versions of the Amazon Inspector SBOM Generator

This topic provides links to the latest and previous versions of the Amazon Inspector SBOM Generator. For information about installing Sbomgen, see Installing Sbomgen.

Latest version

- https://amazon-inspector-sbomgen.s3.amazonaws.com/latest/linux/amd64/inspector-sbomgen.zip
- https://amazon-inspector-sbomgen.s3.amazonaws.com/latest/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.8.0

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.8.0/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.8.0/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.7.3

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.7.3/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.7.3/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.7.2

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.7.2/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.7.2/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.7.1

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.7.1/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.7.1/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.7.0

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.7.0/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.7.0/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.6.3

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.6.3/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.6.3/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.6.2

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.6.2/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.6.2/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.6.1

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.6.1/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.6.1/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.6.0

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.6.0/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.6.0/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.5.5

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.5.5/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.5.5/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.5.4

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.5.4/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.5.4/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.5.3

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.5.3/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.5.3/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.5.2

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.5.2/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.5.2/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.5.1

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.5.1/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.5.1/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.5.0

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.5.0/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.5.0/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.4.0

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.4.0/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.4.0/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.3.2

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.3.2/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.3.2/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.3.1

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.3.1/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.3.1/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.3.0

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.3.0/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.3.0/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.2.1

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.2.1/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.2.1/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.2.0

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.2.0/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.2.0/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.1.1

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.1.1/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.1.1/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.1.0

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.1.0/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.1.0/linux/arm64/inspector-sbomgen.zip

Sbomgen 1.0.0

- Linux AMD64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.0.0/linux/amd64/inspector-sbomgen.zip
- Linux ARM64: https://amazon-inspector-sbomgen.s3.amazonaws.com/1.0.0/linux/arm64/inspector-sbomgen.zip

Amazon Inspector SBOM Generator comprehensive operating system collection

The Amazon Inspector SBOM Generator scans different operating systems to guarantee a robust and detailed analysis of system components. Generating an SBOM helps you understand the composition of your operating system, so you can identify vulnerabilities in system managed packages. This topic describes key features of different operating system package collections the Amazon Inspector SBOM Generator supports. For information about the operating systems that Amazon Inspector supports, see Supported operating systems and programming languages for Amazon Inspector.

Supported operating system artifacts

The Amazon Inspector SBOM Generator supports the following operating system artifacts:

Platform	Binary	Source	Stream
Alma Linux	N/A	Yes	Yes
Alpine Linux	Yes	Yes	N/A
Amazon Linux	N/A	Yes	N/A
CentOS	N/A	Yes	N/A
Chainguard	Yes	Yes	N/A
Debian	Yes	Yes	N/A
Distroless	Yes	Yes	N/A
Fedora	N/A	Yes	N/A
MinimOS	Yes	Yes	N/A
OpenSUSE	N/A	Yes	N/A
Oracle Linux	N/A	Yes	N/A
Photon OS	N/A	Yes	N/A
RHEL	N/A	Yes	Yes
Rocky Linux	N/A	Yes	Yes
SLES	N/A	Yes	N/A
Ubuntu	Yes	Yes	N/A

APK-based OS package collection

This section includes the supported platforms and key features for the APK-based OS package collection. For more information, see Alpine Package Keeper on the Alpine Linux website.

Supported platforms

The following are supported platforms.

- Alpine Linux

> **Note**
>
> For APK-based systems, the Amazon Inspector SBOM Generator collects package metadata from the `/lib/apk/db/` file.

Key features

- **Package name collection** – Extracts the name of each installed package
- **Version collection** – Extracts the version of each installed package
- **Source package identification** – Identifies the source package for each installed package

Example

The following snippet is an example of an APK database file.

```
C:Q1JlboSJkrN4qkDcokr4zenpcWEXQ=
P:zlib
V:1.2.13-r1
A:x86_64
S:54253
I:110592
T:A compression/decompression Library
U:https://zlib.net/
L:Zlib
o:zlib
```

DPKG-based OS package collection

This section includes the supported platforms and key features for the DPKG-based OS package collection. For more information, see Debian Package on the Debian website.

Supported platforms

The following platforms are supported.

- Debian
- Ubuntu

> **Note**
>
> For DPKG-based systems, the Amazon Inspector SBOM Generator collects package metadata from the `/var/lib/dpkg/status` file.

Key features

The following are key features for DPKG-based OS packages.

- **Package name collection** – Extracts the name of each installed package
- **Version collection** – Extracts the version of each installed package
- **Source package identification** – Identifies the source package for each installed package

Example

The following snippet is an example of a `/var/lib/dpkg/` file.

```
Package: zlib1g
Status: install ok installed
Priority: optional
Section: libs
Installed-Size: 168
Maintainer: Mark Brown <broonie@debian.org>
Architecture: amd64
Multi-Arch: same
Source: zlib
Version: 1:1.2.13.dfsg-1
Provides: libz1
Depends: libc6 (>= 2.14)
Breaks: libxml2 (<< 2.7.6.dfsg-2), texlive-binaries (<< 2009-12)
```

```
Conflicts: zlib1 (<= 1:1.0.4-7)
Description: compression library - runtime
 zlib is a library implementing the deflate compression method found
 in gzip and PKZIP.  This package includes the shared library.
Homepage: http://zlib.net/
```

RPM-based OS package collection

This section includes the supported platforms and key features for the RPM-based OS package collection. For more information, see RPM Package Manager on the RPM website.

Supported platforms

The following platforms are supported.

- Alma Linux
- Amazon Linux
- CentOS
- Fedora
- OpenSUSE
- Oracle Linux
- PhotonOS
- RedHat Enterprise Linux
- Rocky Linux
- SUSE Linux Enterprise Server

> **Note**
>
> For RPM-based systems, the Amazon Inspector SBOM Generator collects package metadata from the `/var/lib/rpm` file.

Key features

The following are key features for RPM-based OS package collections.

- **Package name collection** – Extracts the name of each installed package
- **Version collection** – Extracts the version of each installed package
- **Source package identification** – Identifies the source package for each installed package
- **Stream support** – Extracts stream metadata of each installed package

Example

The following is an example of an RPM database file snippet.

```
/usr/lib/sysimage/rpm/rpmdb.sqlite
/usr/lib/sysimage/rpm/Packages
/usr/lib/sysimage/rpm/Packages.db
/var/lib/rpm/rpmdb.sqlite
/var/lib/rpm/Packages
/var/lib/rpm/Packages.db
```

Chainguard image package collection

This section includes the supported platforms and key features for Chainguard image package collection. For more information, see Images on the Chainguard website.

Supported platforms

The following platforms are supported

- Wolfi Linux

> **Note**
>
> For Chainguard images, the Amazon Inspector SBOM Generator collects package metadata from the `/lib/apk/db/installed` file.

Key features

The following are key features.

- **Package name collection** – Extracts the name of each installed package
- **Version collection** – Extracts the version of each installed package
- **Source package identification** – Identifies the source package for each installed package

Example

The following snippet is an example of a Chainguard image file.

```
P:wolfi-keys
V:1-r8
A:x86_64
L:MIT
T:Wolfi signing keyring
o:wolfi-keys
```

Distroless image package collection

Distroless containers are container images that exclude package managers, shells, and other utilities in Linux distributions. Distroless containers only include essential dependencies required to run the application and improve performance and security.

> **Note**
>
> For Distroless images, the Amazon Inspector SBOM Generator collects package metadata from the `/var/lib/dpkg/status.d` file. Only Debian and Ubuntu-based distributions are supported. These can be identified by the `NAME` field in the `/etc/os-release` file system, which shows "Debian" or "Ubuntu."

Key features

- **Package name collection** – Extracts the name of each installed package
- **Version collection** – Extracts the version of each installed package

Example

The following is an example of a Distroless image file.

```
Package: tzdata
Version: 2021a-1+deb11u10
Architecture: all
Maintainer: GNU Libc Maintainers <debian-glibc@lists.debian.org>
Installed-Size: 3413
Depends: debconf (>= 0.5) | debconf-2.0
Provides: tzdata-bullseye
Section: localization
Priority: required
Multi-Arch: foreign
Homepage: https://www.iana.org/time-zones
Description: time zone and daylight-saving time data
 This package contains data required for the implementation of
 standard local time for many representative locations around the
 globe. It is updated periodically to reflect changes made by
 political bodies to time zone boundaries, UTC offsets, and
 daylight-saving rules.
```

MinimOS package collection

This section includes the supported platforms and key features for Minimus image package collection. For more information, see the Minimus website.

Supported platforms

The following platforms are supported.

- MinimOS

> **Note**
>
> For Minimus images, the Amazon Inspector SBOM Generator collects package metadata from the `/lib/apk/db/installed` file.

Key features

The following are key features.

- Package name collection – Extracts the name of each installed package
- Version collection – Extracts the name of each installed package
- Source package identification – Identifies the source package for each installed package

The following is a snippet of a Minimus image file.

```
P:ca-certificates-bundle
V:20241121-r1
A:aarch64
L:MPL-2.0 AND MIT
T:
o:ca-certificates
```

Programming language dependency collection

The Amazon Inspector SBOM Generator supports different programming languages and frameworks, which make up a robust and detailed collection of dependencies. Generating an SBOM helps you understand the composition of your software, so you can identify vulnerabilities and maintain compliance with security standards. The Amazon Inspector SBOM Generator supports the following programming languages and file formats.

Go dependency scanning

Programming language	Package manager	Supported artifacts	Toolchain support	Development dependencies	Transitive dependencies	Private flag	Recursively
Go	Go	`go.mod`	N/A	N/A	N/A	N/A	Yes
		`go.sum`	N/A	N/A	N/A	N/A	Yes
		Go Binaries	Yes	N/A	N/A	N/A	Yes
		`GOMODCACHE`	N/A	N/A	N/A	N/A	No

go.mod/go.sum

Use `go.mod` and `go.sum` files to define and lock dependencies in Go projects. The Amazon Inspector SBOM Generator manages these files differently based on the Go toolchain version.

Key features

- Collects dependencies from `go.mod` (if the Go toolchain version is 1.17 or higher)
- Collects dependencies from `go.sum` (if the Go toolchain version is 1.17 or lower)
- Parses `go.mod` to identify all declared dependencies and dependency versions

Example `go.mod` file

The following is an example of `go.mod` file.

```
module example.com/project

go 1.17

require (
github.com/gin-gonic/gin v1.7.2
golang.org/x/crypto v0.0.0-20210616213533-5cf6c0f8e123
)
```

Example `go.sum` file

The following is an example of `go.sum` file.

```
github.com/gin-gonic/gin v1.7.2 h1:VZ7DdRl0sghbA6lVGSkX+UXO2+J0aH7RbsNugG+FA8Q=
github.com/gin-gonic/gin v1.7.2/go.mod h1:ILZ1Ngh2f1pL1ASUj7gGk8lGFeNC8cRTaN2ZhsBNbXU=
golang.org/x/crypto v0.0.0-20210616213533-5cf6c0f8e123 h1:b6rCu+qHze
+BUsmC3CZzH8aNu8LzPZTVsNTo64OypSc=
golang.org/x/crypto v0.0.0-20210616213533-5cf6c0f8e123/go.mod h1:K5Dkpb0Q4ewZW/
EzWlQphgJcUMBCzoWrLfDOVzpTGVQ=
```

Note

Each of these files produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

Go Binaries

The Amazon Inspector SBOM Generator extracts dependencies from compiled Go binaries to provide assurance about the code in use.

Note

The Amazon Inspector SBOM Generator supports capturing and evaluating toolchain versions from Go binaries built using the official Go compiler. For more information, see Download and install on the Go website. If you are using the Go toolchain from another vendor, such as Red Hat, evaluation might not be accurate due to potential differences in distribution and metadata availability.

Key features

- Extracts dependency information directly from Go binaries
- Collects dependencies embedded within the binary
- Detects and extracts the Go toolchain version used for compiling the binary.

GOMODCACHE

The Amazon Inspector SBOM Generator scans the Go module cache to collect information about installed dependencies. This cache stores downloaded modules to make sure the same versions are used across different builds.

Key features

- Scans the `GOMODCACHE` directory to identify cached modules
- Extracts detailed metadata, including module names, versions, and source URLs

Example structure

The following is an example of the GOMODCACHE structure.

```
~/go/pkg/mod/
### github.com/gin-gonic/gin@v1.7.2
### golang.org/x/crypto@v0.0.0-20210616213533-5cf6c0f8e123
```

> **Note**
>
> This structure produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

Java dependency scanning

Programming language	Package manager	Supported artifacts	Toolchain support	Development dependencies	Transitive dependencies	Private flag	Recursively
Java	Maven	Compiled Java applications (.jar/.war/.ear)	N/A	N/A	Yes	N/A	Yes
		pom.xml	N/A	N/A	Yes	N/A	Yes

The Amazon Inspector SBOM Generator performs Java dependency scanning by analyzing compiled Java applications and pom.xml files. When scanning compiled applications, the scanner

generates SHA–1 hashes for integrity verification, extracts embedded `pom.properties` files, and parses nested `pom.xml` files.

SHA–1 hash collection (for compiled .jar, .war, .ear files)

The Amazon Inspector SBOM Generator tries to collect SHA–1 hashes for all `.ear`, `.jar`, and `.war` files in a project to guarantee the integrity and traceability of compiled Java artifacts.

Key features

- Generates SHA–1 hashes for all compiled Java artifacts

Example artifact

The following is an example of an SHA–1 artifact.

```
{
  "bom-ref": "comp-52",
  "type": "library",
  "name": "jul-to-slf4j",
  "version": "2.0.6",
  "hashes": [
    {
      "alg": "SHA-1",
      "content": ""
    }
  ],
  "purl": "pkg:maven/jul-to-slf4j@2.0.6",
  "properties": [
    {
      "name": "amazon:inspector:sbom_generator:source_path",
      "value": "test-0.0.1-SNAPSHOT.jar/BOOT-INF/lib/jul-to-slf4j-2.0.6.jar"
    }
  ]
}
```

Note

This artifact produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials

and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

pom.properties

The `pom.properties` file is used in Maven projects to store project metadata, including package names and package versions. The Amazon Inspector SBOM Generator parses this file to collect project information.

Key features

- Parses and extracts package artifacts, package groups, and package versions

Example `pom.properties` file

The following is an example of a `pom.properties` file.

```
#Generated by Maven
#Tue Mar 16 15:44:02 UTC 2021

version=1.6.0
groupId=net.datafaker
artifactId=datafaker
```

Note

This file produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

Excluding nested `pom.xml` parsing

If you want to exclude `pom.xml` parsing when scanning compiled Java applications, use the `--skip-nested-pomxml` argument.

pom.xml

The `pom.xml` file is the core configuration file for Maven projects. It contains information about projects and project dependencies. The Amazon Inspector SBOM Generator parses pom.xml files to collect dependencies, scanning standalone files in repositories and files inside compiled .jar files.

Key features

- Parses and extracts package artifacts, package groups, and package versions from `pom.xml` files.

Supported Maven scopes and tags

Dependencies are collected with the following Maven scopes:

- compile
- provided
- runtime
- test
- system
- import

Dependencies are collected with the following Maven tag: `<optional>true</optional>`.

Example `pom.xml` file with a scope

The following is an example of a `pom.xml` file with a scope.

```
<dependency>
<groupId>jakarta.servlet</groupId>
<artifactId>jakarta.servlet-api</artifactId>
</version>6.0.0</version>
<scope>provided</scope>
</dependency>
<dependency>
<groupId>mysql</groupId>
<artifactId>mysql-connector-java</artifactId>
<version>8.0.28</version>
```

```
<scope>runtime</scope>
</dependency>
```

Example `pom.xml` file without a scope

The following is an example of a `pom.xml` file without a scope.

```
<dependency>
<groupId>com.fasterxml.jackson.core</groupId>
<artifactId>jackson-databind</artifactId>
<version>2.17.1</version>
</dependency>

<dependency>
<groupId>org.jenkins-ci.plugins</groupId>
<artifactId>plain-credentials</artifactId>
<version>183.va_de8f1dd5a_2b_</version>
</dependency>

<dependency>
<groupId>org.jenkins-ci.plugins</groupId>
<artifactId>jackson2-api</artifactId>
<version>2.15.2-350.v0c2f3f8fc595</version>
</dependency>
```

Note

Each of these files produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

JavaScript dependency scanning

Programming language	Package manager	Supported artifacts	Toolchain support	Development dependencies	Transitive dependencies	Private flag	Recursively
Javascript	Node Modules	node_modules/*/package.json	N/A	N/A	Yes	Yes	Yes
	NPM		N/A	Yes	N/A	N/A	No
	PNPM	package-lock.json (v1, v2, and v3) / npm-shrinkwrap.json	N/A	Yes	N/A	N/A	No
	YARN	pnpm-lock.yaml yarn.lock	N/A	Yes	N/A	N/A	No

package.json

The `package.json` file is a core component of Node.js projects. It contains metadata about installed packages. The Amazon Inspector SBOM Generator scans this file to identify package names and package versions.

Key features

- Parses the JSON file structure to extract package names and versions
- Identifies private packages with private values

Example `package.json` file

The following is an example of a `package.json` file.

```
{
"name": "arrify",
"private": true,
"version": "2.0.1",
"description": "Convert a value to an array",
"license": "MIT",
"repository": "sindresorhus/arrify"
}
```

> **Note**
>
> This file produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

package-lock.json

The `package-lock.json` file is automatically generated by npm to lock exact versions of dependencies installed for a project. It ensures consistency in environments by storing exact versions of all dependencies and their sub-dependencies. This file can distinguish between regular dependencies and development dependencies.

Key features

- Parses the JSON file structure to extract package names and package versions
- Supports dev dependency detection

Example `package-lock.json` file

The following is an example of a `package-lock.json` file.

```
"verror": {
"version": "1.10.0",
"resolved": "https://registry.npmjs.org/verror/-/verror-1.10.0.tgz",
"integrity": "sha1-OhBcoXBTr1XW4nDB+CiGguGNpAA=",
"requires": {
    "assert-plus": "^1.0.0",
    "core-util-is": "1.0.2",
    "extsprintf": "^1.2.0"
}
},
"wrappy": {
"version": "1.0.2",
"resolved": "https://registry.npmjs.org/wrappy/-/wrappy-1.0.2.tgz",
"integrity": "sha1-tSQ9jz7BqjXxNkYFvA0QNuMKtp8=",
"dev": true
},
"yallist": {
"version": "3.0.2",
"resolved": "https://registry.npmjs.org/yallist/-/yallist-3.0.2.tgz",
"integrity": "sha1-hFK0u36Dx8GI2AQcGoN8dz1ti7k="
}
```

Note

This file produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

npm-shrinkwrap.json

npm automatically generates`package-lock.json` and `npm-shrinkwrap.json` files to lock exact versions of dependencies installed for a project. This guarantees consistency in environments

by storing exact versions of all dependencies and sub-dependencies. The files distinguish between regular dependencies and development dependencies.

Key features

- Parse `package-lock` versions 1 ,2, and 3 of the JSON file structure to extract the package name and version
- Developer dependency detection is supported (`package-lock.json` captures production and development dependencies, allowing tools to identify which packages are used in development environments)
- The `npm-shrinkwrap.json` file is prioritized over the `package-lock.json` file

Example

The following is an example of a `package-lock.json` file.

```
"verror": {
            "version": "1.10.0",
            "resolved": "https://registry.npmjs.org/verror/-/verror-1.10.0.tgz",
            "integrity": "sha1-OhBcoXBTr1XW4nDB+CiGguGNpAA=",
            "requires": {
                "assert-plus": "^1.0.0",
                "core-util-is": "1.0.2",
                "extsprintf": "^1.2.0"
            }
        },
        "wrappy": {
            "version": "1.0.2",
            "resolved": "https://registry.npmjs.org/wrappy/-/wrappy-1.0.2.tgz",
            "integrity": "sha1-tSQ9jz7BqjXxNkYFvA0QNuMKtp8=",
            "dev": true
        },
        "yallist": {
            "version": "3.0.2",
            "resolved": "https://registry.npmjs.org/yallist/-/yallist-3.0.2.tgz",
            "integrity": "sha1-hFK0u36Dx8GI2AQcGoN8dz1ti7k="
}
```

pnpm-yaml.lock

The `pnpm-lock.yaml` file is generated by pnpm to maintain a record of installed dependency versions. It also tracks development dependencies separately.

Key features

- Parses the YAML file structure to extract package names and versions
- Supports dev dependency detection

Example

The following is an example of a `pnpm-lock.yaml` file.

```
lockfileVersion: 5.3
importers:
my-project:
dependencies:
  lodash: 4.17.21
devDependencies:
  jest: 26.6.3
specifiers:
  lodash: ^4.17.21
  jest: ^26.6.3
packages:
/lodash/4.17.21:
resolution:
  integrity: sha512-xyz
engines:
  node: '>=6'
dev: false
/jest/26.6.3:
resolution:
  integrity: sha512-xyz
dev: true
```

Note

This file produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

yarn.lock

The Amazon Inspector SBOM Generator tries to collect SHA–1 hashes for `.ear`, `.jar`, and `.war` files in a project to guarantee the integrity and traceability of compiled Java artifacts.

Key features

- Generates SHA–1 hashes for all compiled Java artifacts

Example SHA–1 artifact

The following is an example of an SHA–1 artifact.

```
"@ampproject/remapping@npm:^2.2.0":
version: 2.2.0
resolution: "@ampproject/remapping@npm:2.2.0"
dependencies:
"@jridgewell/gen-mapping": ^0.1.0
"@jridgewell/trace-mapping": ^0.3.9
checksum:
 d74d170d06468913921d72430259424b7e4c826b5a7d39ff839a29d547efb97dc577caa8ba3fb5cf023624e9af9d09
languageName: node
linkType: hard

"@babel/code-frame@npm:^7.0.0, @babel/code-frame@npm:^7.12.13, @babel/code-
frame@npm:^7.18.6, @babel/code-frame@npm:^7.21.4":
version: 7.21.4
resolution: "@babel/code-frame@npm:7.21.4"
dependencies:
"@babel/highlight": ^7.18.6
checksum:
 e5390e6ec1ac58dcef01d4f18eaf1fd2f1325528661ff6d4a5de8979588b9f5a8e852a54a91b923846f7a5c681b217
```

```
languageName: node
linkType: hard
```

> **Note**
>
> This artifact produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

.NET dependency scanning

Programming language	Package manager	Supported artifacts	Toolchain support	Development dependencies	Transitive dependencies	Private flag	Recursively
.NET	.NET Core	*.deps.json	N/A	N/A	N/A	N/A	Yes
	Nuget	Packages.config	N/A	N/A	N/A	N/A	Yes
	Nuget	packages.lock.json	N/A	N/A	Yes	N/A	Yes
	.NET	.csproj	N/A	N/A	N/A	N/A	Yes

Packages.config

The `Packages.config` file is an XML file used by an older version of Nuget to manage project dependencies. It lists all the packages referenced by the project, including specific versions.

Key features

- Parses XML structure to extract package IDs and versions

Example

The following is an example of a `Packages.config` file.

```
<?xml version="1.0" encoding="utf-8"? >
<packages>
<package id="FluentAssertions" version="5.4.1" targetFramework="net461" />
<package id="Newtonsoft.Json" version="11.0.2" targetFramework="net461" />
<package id="SpecFlow" version="2.4.0" targetFramework="net461" />
<package id="SpecRun.Runner" version="1.8.0" targetFramework="net461" />
<package id="SpecRun.SpecFlow" version="1.8.0" targetFramework="net461" />
<package id="SpecRun.SpecFlow.2-4-0" version="1.8.0" targetFramework="net461" />
<package id="System.ValueTuple" version="4.5.0" targetFramework="net461" />
</packages>
```

Note

This file produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

*.deps.json

The `*.deps.json` file is generated by .NET Core projects and contains detailed information about all dependencies, including paths, versions, and runtime dependencies. This file makes sure the runtime has necessary information to load correct versions of dependencies.

Key features

- Parses the JSON structure for comprehensive dependency details
- Extracts package names and versions in a `libraries` list.

Example `.deps.json` file

The following is an example of a `.deps.json` file.

```
{
"runtimeTarget": {
    "name": ".NETCoreApp,Version=v7.0",
    "signature": ""
},
"libraries": {
    "sample-Nuget/1.0.0": {
        "type": "project",
        "serviceable": false,
        "sha512": ""
    },
    "Microsoft.EntityFrameworkCore/7.0.5": {
        "type": "package",
        "serviceable": true,
        "sha512": "sha512-
RXbRLHHWP2Z3pq8qcL5nQ6LPeoOyp8hasM5bd0Te8PiQi3RjWQR4tcbdY5XMqQ+oTO9wA8/RLhZRn/
hnxlTDnQ==",
        "path": "microsoft.entityframeworkcore/7.0.5",
        "hashPath": "microsoft.entityframeworkcore.7.0.5.nupkg.sha512"
    },
}
```

> **Note**
>
> This file produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

packages.lock.json

The `packages.lock.json` file is used by newer versions of Nuget to lock exact versions of dependencies for a .NET project to guarantee the same versions are used consistently across different environments.

Key features

- Parses the JSON structure to list locked dependencies
- Supports both direct and transitive dependencies
- Extracts package name and resolved versions

Example `packages.lock.json` file

The following is an example of a `packages.lock.json` file.


```
{
"version": 1,
"dependencies": {
"net7.0": {
  "Microsoft.EntityFrameworkCore": {
    "type": "Direct",
    "requested": "[7.0.5, )",
    "resolved": "7.0.5",
    "contentHash": "RXbRLHHWP2Z3pq8qcL5nQ6LPeoOyp8hasM5bd0Te8PiQi3RjWQR4tcbdY5XMqQ
+oTO9wA8/RLhZRn/hnxlTDnQ==",
    "dependencies": {
      "Microsoft.EntityFrameworkCore.Abstractions": "7.0.5",
      "Microsoft.EntityFrameworkCore.Analyzers": "7.0.5",
      "Microsoft.Extensions.Caching.Memory": "7.0.0",
      "Microsoft.Extensions.DependencyInjection": "7.0.0",
      "Microsoft.Extensions.Logging": "7.0.0"
    }
  },
  "Newtonsoft.Json": {
    "type": "Direct",
    "requested": "[13.0.3, )",
    "resolved": "13.0.3",
    "contentHash": "HrC5BXdl00IP9zeV+0Z848QWPAoCr9P3bDEZguI+gkLcBKAOxix/tLEAAHC
+UvDNPv4a2d18lOReHMOagPa+zQ=="
  },
  "Microsoft.Extensions.Primitives": {
    "type": "Transitive",
    "resolved": "7.0.0",
    "contentHash": "um1KU5kxcRp3CNuI8o/GrZtD4AIOXDk
+RLsytjZ9QPok3ttLUelLKpilVPuaFT3TFjOhSibUAso0odbOaCDj3Q=="
  }
```

```
}
}
}
```

> **Note**
>
> This file produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

.csproj

The `.csproj` file is written in XML and the project file for .NET projects. It includes references to Nuget packages, project properties, and build configurations.

Key features

- Parses XML the structure to extract package references

Example `.csproj` file

The following is an example of a `.csproj` file.

```
<Project Sdk="Microsoft.NET.Sdk">
<PropertyGroup>
<TargetFramework>net7.0</TargetFramework>
<RootNamespace>sample_Nuget</RootNamespace>
<ImplicitUsings>enable</ImplicitUsings>
<Nullable>enable</Nullable>
<RestorePackagesWithLockFile>true</RestorePackagesWithLockFile>
</PropertyGroup>
<ItemGroup>
</ItemGroup>
<ItemGroup>
<PackageReference Include="Newtonsoft.Json" Version="13.0.3" />
<PackageReference Include="Microsoft.EntityFrameworkCore" Version="7.0.5" />
```

```
</ItemGroup>
</Project>
```

Example `.csproj` file

The following is an example of a `.csproj` file.

```
<PackageReference Include="ExamplePackage" Version="6.*" />
<PackageReferencePackageReference Include="ExamplePackage" Version="(4.1.3,)" />
<PackageReference Include="ExamplePackage" Version="(,5.0)" />
<PackageReference Include="ExamplePackage" Version="[1,3)" />
<PackageReference Include="ExamplePackage" Version="[1.3.2,1.5)" />
```

Note

Each of these files produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

PHP dependency scanning

Programming language	Package manager	Supported artifacts	Toolchain support	Development dependencies	Transitive dependencies	Private flag	Recursively
PHP	Composer	`composer.lock`	N/A	N/A	Yes	N/A	Yes
		`/vendor/composer/`	N/A	N/A	Yes	N/A	Yes

Programming language	Package manager	Supported artifacts	Toolchain support	Development dependencies	Transitive dependencies	Private flag	Recursively
		`installed.json`					

composer.lock

The `composer.lock` file is automatically generated when running the composer install or composer update commands. This file guarantees the same versions of dependencies are installed in every environment. This provides a consistent and reliable build process.

Key features

- Parses the JSON format for structured data
- Extracts dependency names and versions

Example `composer.lock` file

The following is an example of a `composer.lock` file.

```
{
"packages": [
    {
        "name": "nesbot/carbon",
        "version": "2.53.1",
        // TRUNCATED
    },
    {
        "name": "symfony/deprecation-contracts",
        "version": "v3.2.1",
        // TRUNCATED
    },
    {
        "name": "symfony/polyfill-mbstring",
```

```
        "version": "v1.27.0",
        // TRUNCATED
    }
]
// TRUNCATED
}
```

> **Note**
>
> This produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

/vendor/composer/installed.json

The `/vendor/composer/installed.json` file is located in the `vendor/composer` directory and provides a comprehensive list of all installed packages and package versions.

Key features

- Parses the JSON format for structured data
- Extracts dependency names and version

Example `/vendor/composer/installed.json` file

The following is an example of a `/vendor/composer/installed.json` file.

```
{
"packages": [
    {
        "name": "nesbot/carbon",
        "version": "2.53.1",
        // TRUNCATED
    },
    {
        "name": "symfony/deprecation-contracts",
```

```
        "version": "v3.2.1",
        // TRUNCATED
    },
    {
        "name": "symfony/polyfill-mbstring",
        "version": "v1.27.0",
        // TRUNCATED
    }
]
// TRUNCATED
}
```

> **Note**
>
> This file produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

Python dependency scanning

Programming language	Package manager	Supported artifacts	Toolchain support	Development dependencies	Transitive dependencies	Private flag	Recursively
Python	pip	requirements.txt	N/A	N/A	N/A	N/A	Yes
	Poetry	Poetry.lock	N/A	N/A	N/A	N/A	Yes
	Pipenv	Pipfile.lock	N/A	N/A	N/A	N/A	Yes
	Egg/Wheel	.egg-info	N/A	N/A	N/A	N/A	Yes

Programming language	Package manager	Supported artifacts	Toolchain support	Development dependencies	Transitive dependencies	Private flag	Recursively
		/PKG-INFO .dist-info/METADATA					

requirements.txt

The `requirements.txt` file is a widely used format in Python projects to specify project dependencies. Each line in this file includes a package with its version constraints. The Amazon Inspector SBOM Generator parses this file to identify and catalog dependencies accurately.

Key features

- Supports version specifiers (== and ~=)
- Supports comments and complex dependency lines

> **Note**
>
> The version specifiers <= and => aren't supported.

Example `requirements.txt` file

The following is an example of a `requirements.txt` file.

```
flask==1.1.2
requests==2.24.0
numpy==1.18.5
foo~=1.2.0
```

```
# Comment about a dependency
scipy. # invalid
```

> **Note**
>
> This file produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

Pipfile.lock

Pipenv is a tool bringing the best of all packaging worlds (bundled, pinned, and unpinned). The `Pipfile.lock` locks exact versions of dependencies to facilitate deterministic builds. The Amazon Inspector SBOM Generator reads this file to list dependencies and their resolved versions.

Key features

- Parses the JSON format for dependency resolution
- Supports default and development dependencies

Example `Pipfile.lock` file

The following is an example of a `Pipfile.lock` file.

```
{
"default": {
    "requests": {
        "version": "==2.24.0",
        "hashes": [
            "sha256:cc718bb187e53b8d"
        ]
    }
},
"develop": {
    "blinker": {
        "hashes": [
```

```
            "sha256:1779309f71bf239144b9399d06ae925637cf6634cf6bd131104184531bf67c01",
            "sha256:8f77b09d3bf7c795e969e9486f39c2c5e9c39d4ee07424be2bc594ece9642d83"
        ],
        "markers": "python_version >= '3.8'",
        "version": "==1.8.2"
    }
}
}
```

> **Note**
>
> This file produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

Poetry.lock

Poetry is a dependency management and packaging tool for Python. The `Poetry.lock` file locks exact versions of dependencies to facilitate consistent environments. The Amazon Inspector SBOM Generator extracts detailed dependency information from this file.

Key features

- Parses the TOML format for structured data
- Extracts dependency names, and versions

Example `Poetry.lock` file

The following is an example of a `Poetry.lock` file.

```
[[package]]
name = "flask"
version = "1.1.2"
description = "A simple framework for building complex web applications."
category = "main"
optional = false
```

```
python-versions = ">=3.5"
[[package]]
name = "requests"
version = "2.24.0"
description = "Python HTTP for Humans."
category = "main"
optional = false
python-versions = ">=3.5"
```

Note

This file produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

Egg/Wheel

For globally installed Python packages, the Amazon Inspector SBOM Generator supports parsing metadata files found in the `.egg-info/PKG-INFO` and `.dist-info/METADATA` directories. These files provide detailed metadata about installed packages.

Key features

- Extracts package name, and version
- Supports both egg and wheel formats

Example `PKG-INFO/METADATA` file

The following is an example of a `PKG-INFO/METADATA` file.

```
Metadata-Version: 1.2
Name: Flask
Version: 1.1.2
Summary: A simple framework for building complex web applications.
Home-page: https://palletsprojects.com/p/flask/
```

Note

This file produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

Ruby dependency scanning

Programming language	Package manager	Supported artifacts	Toolchaing support	Development dependencies	Transitive dependencies	Private flag	Recursively
Ruby	Bundler	Gemfile.lock	N/A	N/A	Yes	N/A	Yes
		.gemspec	N/A	N/A	N/A	N/A	Yes
		globall installed Gems	N/A	N/A	N/A	N/A	Yes

Gemfile.lock

The `Gemfile.lock` file locks exact versions of all dependencies to make sure the same versions are used in every environment.

Key features

- Parses the `Gemfile.lock` file to identity dependencies and dependency versions
- Extracts detailed package names and package versions

Example `Gemfile.lock` file

The following is an example of a `Gemfile.lock` file.

```
GEM
remote: https://rubygems.org/
specs:
ast (2.4.2)
awesome_print (1.9.2)
diff-lcs (1.5.0)
json (2.6.3)
parallel (1.22.1)
parser (3.2.2.0)
nokogiri (1.16.6-aarch64-linux)
```

Note

This file produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

.gemspec

The `.gemspec` file is a RubyGem file containing metadata about a gem. The Amazon Inspector SBOM Generator parses this file to collect detailed information about a gem.

Key features

- Parses and extracts the gem name and gem version

Note

Reference specification is not supported.

Example `.gemspec` file

The following is an example of a `.gemspec` file.

```
Gem::Specification.new do |s|
s.name        = "generategem"
s.version     = "2.0.0"
s.date        = "2020-06-12"
s.summary     = "generategem"
s.description = "A Gemspec Builder"
s.email       = "edersondeveloper@gmail.com"
s.files       = ["lib/generategem.rb"]
s.homepage    = "https://github.com/edersonferreira/generategem"
s.license     = "MIT"
s.executables = ["generategem"]
s.add_dependency('colorize', '~> 0.8.1')
end
```

```
# Not supported

Gem::Specification.new do |s|
s.name        = &class1
s.version     = &foo.bar.version
```

Note

This file produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

Globally installed gems

The Amazon Inspector SBOM Generator supports scanning globally installed gems, which are located in standard directories, such as `/usr/local/lib/ruby/gems/<ruby_version>/gems/` in Amazon EC2/Amazon ECR and `ruby/gems/<ruby_version>/gems/` in Lambda. This makes sure all globally installed dependencies are identified and cataloged.

Key features

- Identifies and scans all globally installed gems in standard directories

- Extracts metadata and version information for each globally installed gem

Example directory structure

The following is an example of a directory structure.

```
.
### /usr/local/lib/ruby/3.5.0/gems/
### actrivesupport-6.1.4
### concurrent-ruby-1.1.9
### i18n-1.8.10
```

> **Note**
>
> This structure produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

Rust dependency scanning

Programming language	Package manager	Supported artifacts	Toolchain support	Development dependencies	Transitive dependencies	Private flag	Recursively
Rust	Cargo.toml	Cargo.toml	N/A	N/A	N/A	N/A	Yes
		Cargo.lock	N/A	N/A	Yes	N/A	Yes
		Rust binary (built	Yes	N/A	N/A	N/A	Yes

Programming language	Package manager	Supported artifacts	Toolchain support	Development dependencies	Transitive dependencies	Private flag	Recursively
		with cargo-auditable)					

Cargo.toml

The `Cargo.toml` file is the manifest file for Rust projects.

Key features

- Parses and extracts the `Cargo.toml` file to identify the project package name and version.

Example `Cargo.toml` file

The following is an example of a `Cargo.toml` file.

```
[package]
name = "wait-timeout"
version = "0.2.0"
description = "A crate to wait on a child process with a timeout specified across Unix
 and\nWindows platforms.\n"
homepage = "https://github.com/alexcrichton/wait-timeout"
documentation = "https://docs.rs/wait-timeout"
readme = "README.md"
categories = ["os"]
license = "MIT/Apache-2.0"
repository = "https://github.com/alexcrichton/wait-timeout"
[target."cfg(unix)".dependencies.libc]
version = "0.2"
[badges.appveyor]
repository = "alexcrichton/wait-timeout"
```

Note

This file produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

Cargo.lock

The `Cargo.lock` file locks dependency versions to make sure the same versions are used whenever a project is built.

Key features

- Parses the `Cargo.lock` file to identify all dependencies and dependency versions.

Example `Cargo.lock` file

The following is an example of a `Cargo.lock` file.

```
# This file is automatically @generated by Cargo.
# It is not intended for manual editing.
[[package]]
name = "adler32"
version = "1.0.3"
source = "registry+https://github.com/rust-lang/crates.io-index"

[[package]]
name = "aho-corasick"
version = "0.7.4"
source = "registry+https://github.com/rust-lang/crates.io-index"
```

Note

This file produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can

be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

Rust binaries with cargo-auditable

The Amazon Inspector SBOM Generator collects dependencies from Rust binaries built with the `cargo-auditable` library. This provides additional dependency information by enabling dependency extraction from compiled binaries.

Key features

- Extracts dependency information directly from Rust binaries built with the `cargo-auditable` library
- Retrieves metadata and version information for dependencies included in the binaries

> **Note**
>
> This file produces an output that contains a package URL. This URL can be used to specify information about software packages when generating a software bill of materials and can be included in the ScanSbom API. For more information, see package-url on the GitHub Website.

Unsupported artifacts

This section describes unsupported artifacts.

Java

The Amazon Inspector SBOM Generator generator only supports vulnerability detection for dependencies sourced from the mainstream Maven repository. Private or custom Maven repositories, such as Red Hat Maven and Jenkins, aren't supported. For accurate vulnerability detection, make sure Java dependencies are pulled from the mainstream Maven repository. Dependencies from other repositories won't be covered in vulnerability scans.

JavaScript

esbuild bundles

For esbuild minified bundles, the Amazon Inspector SBOM Generator doesn't support dependency scanning for projects using esbuild. Source maps generated by esbuild don't include sufficient metadata(dependency names and versions) required for accurate Sbomgen generation. For reliable results, scan the original project files, such as the `node_modules/directory` and `package-lock.json`, prior to the bundling process.

package.json

The Amazon Inspector SBOM Generator doesn't support scanning the root-level package.json file for dependency information. This file only specifies package names and version ranges, but doesn't include fully resolved package versions. For accurate scanning results, use `package.json` or other lock files, such as `yarn.lock` and `pnpm.lock`, that include resolved versions.

Dotnet

When using floating versions or version ranges in `PackageReference`, it becomes more challenging to determine the exact package version used in a project without performing package resolution. Floating versions and version ranges allow developers to specify a range of acceptable package versions rather than a fixed version.

Go binaries

The Amazon Inspector SBOM Generator doesn't scan Go binaries that are built with build flags configured to exclude the build ID. These build flags prevent Bomerman from accurately mapping the binary to its original source. Unclear Go binaries aren't supported due to the inability to extract package information. For accurate dependency scanning, make sure that Go binaries are built with default settings, including the build ID.

Rust binaries

The Amazon Inspector SBOM Generator only scans Rust binaries if the binaries are built using the cargo-auditable library. Rust binaries not utilizing this library lack necessary metadata for accurate dependency extraction. The Amazon Inspector SBOM Generator extract the compiled Rust toolchain version starting from Rust 1.7.3, but only for binaries in a Linux environment. For comprehensive scanning, build Rust binaries on Linux using cargo-auditable.

> **Note**
>
> Vulnerability detection for the Rust toolchain itself isn't supported, even if the toolchain version is extracted.

Amazon Inspector SBOM Generator comprehensive ecosystem collection

The Amazon Inspector SBOM Generator is a tool for creating a software bill of materials (SBOM) and performing vulnerability scanning for supported packages from operating systems and programming languages. It also supports the scanning of various ecosystems beyond core operating systems, ensuring a robust and detailed analysis of infrastructure components. By generating an SBOM, users can understand the composition of their modern technology stacks, identify vulnerabilities in ecosystem components, and gain visibility into third party software.

Supported ecosystems

The ecosystem collection extends SBOM generation beyond packages installed through OS package managers. This is done through the collection of applications deployed in alternative methods, such as manual installation. The Amazon Inspector SBOM Generator supports scanning for the following ecosystems:

Ecosystems	Applications
Apache	httpd tomcat
Google	Chrome
Java	JDK JRE Amazon Corretto
Nginx	Nginx

Ecosystems	Applications
Node	Node
OpenSSH	OpenSSH (Versions 9 and 10)
OpenSSL	OpenSSL
Oracle	Oracle Database Server
WordPress	core plugin theme
Node.JS	node

Apache ecosystem collection

The Amazon Inspector SBOM Generator scans for Apache installations that are in common installation paths across platforms:

- macOS: `/Library/`
- Linux: `/etc/`, `/usr/share`, `/usr/lib`, `/usr/local`, `/var`, `/opt`

Supported applications

- httpd
- tomcat

Key features

- Apache httpd – Parses the `/include/ap_release.h` file to extract installation macros, which contain major identifier strings, minor identifier strings, and patch identifier strings.
- Apache tomcat – Unpacks the `catalina.jar` file to extract installation macros inside of the (`META-INF/MANIFEST.MF`) file, which contains the version string.

Example `ap_release.h` file

The following is an example of the content inside of the `ap_release.h` file.

```
//truncated

#define AP_SERVER_BASEVENDOR "Apache Software Foundation"
#define AP_SERVER_BASEPROJECT "Apache HTTP Server"
#define AP_SERVER_BASEPRODUCT "Apache"

#define AP_SERVER_MAJORVERSION_NUMBER 2
#define AP_SERVER_MINORVERSION_NUMBER 4
#define AP_SERVER_PATCHLEVEL_NUMBER   1
#define AP_SERVER_DEVBUILD_BOOLEAN    0

//truncated
```

Example PURL

The following is an example package URL for an `Apache httpd` application.

```
Sample PURL: pkg:generic/apache/httpd@2.4.1
```

Example `catalina.jar/META-INF/MANIFEST.MF` file

The following is an example of the content inside of the `catalina.jar/META-INF/MANIFEST.MF` file.

```
//truncated

Implementation-Title: Apache Tomcat
Implementation-Vendor: Apache Software Foundation
Implementation-Version: 10.1.31

//truncated
```

Example PURL

The following is an example package URL for an `Apache Tomcat` application.

```
Sample PURL: pkg:generic/apache/tomcat@10.1.31
```

Google ecosystem collection

Supported application

- Google Chrome

Supported artifacts

Amazon Inspector collects Google Chrome information from the following:

- The `chrome/VERSION` file (build source)
- The `puppeteer` file (installation)

The Amazon Inspector SBOM Generator parses and collects corresponding versions of each of the supported artifacts.

Example `chrome/VERSION` version file

The following is an example of the `chrome/VERSION` version file.

```
MAJOR=130
MINOR=0
BUILD=6723
PATCH=58
```

Example PURL

The following is an example package URL for a `chrome/VERSION` version file.

```
Sample PURL: pkg:generic/google/chrome@131.0.6778.87
```

Example `puppeteer` version file

The following is an example of the `puppeteer` version file.

```
{
"name": "puppeteer",
"version": "23.9.0",
"description": "A high-level API to control headless Chrome over the DevTools
 Protocol",
"keywords": [
  "puppeteer",
  "chrome",
  "headless",
  "automation"
]
}
```

Example PURL

The following is an example package URL for a `puppeteer` version file.

```
Sample PURL: pkg:generic/google/puppeteer@23.9.0
```

Java ecosystem collection

Supported applications

- Oracle JDK
- Oracle JRE
- Amazon Corretto

Key features

- Extracts the string of the Java installation.
- Identifies the directory path that contains the Java runtime.
- Identifies the vendor as Oracle JDK, Oracle JRE, and Amazon Corretto.

The Amazon Inspector SBOM Generator scans for Java installations across the following installation paths and platforms:

- macOS: `/Library/Java/JavaVirtualMachines`
- Linux 32-bit: `/usr/lib/jvm`
- Linux 64-bit: `/usr/lib64/jvm`
- Linux (generic): `/usr/java and /opt/java`

Example Java version information

The folllowing is an example of an Oracle Java release.

```
// Amazon Corretto
IMPLEMENTOR="Amazon.com Inc."
IMPLEMENTOR_VERSION="Corretto-17.0.11.9.1"
JAVA_RUNTIME_VERSION="17.0.11+9-LTS"
JAVA_VERSION="17.0.11"
JAVA_VERSION_DATE="2024-04-16"
LIBC="default"
MODULES="java.base java.compiler java.datatransfer java.xml java.prefs java.desktop
 java.instrument java.logging java.management java.security.sasl java.naming
 java.rmi java.management.rmi java.net.http java.scripting java.security.jgss
 java.transaction.xa java.sql java.sql.rowset java.xml.crypto java.se java.smartcardio
 jdk.accessibility jdk.internal.jvmstat jdk.attach jdk.charsets jdk.compiler
 jdk.crypto.ec jdk.crypto.cryptoki jdk.dynalink jdk.internal.ed jdk.editpad
 jdk.hotspot.agent jdk.httpserver jdk.incubator.foreign jdk.incubator.vector
 jdk.internal.le jdk.internal.opt jdk.internal.vm.ci jdk.internal.vm.compiler
 jdk.internal.vm.compiler.management jdk.jartool jdk.javadoc jdk.jcmd jdk.management
 jdk.management.agent jdk.jconsole jdk.jdeps jdk.jdwp.agent jdk.jdi jdk.jfr jdk.jlink
 jdk.jpackage jdk.jshell jdk.jsobject jdk.jstatd jdk.localedata jdk.management.jfr
 jdk.naming.dns jdk.naming.rmi jdk.net jdk.nio.mapmode jdk.random jdk.sctp
 jdk.security.auth jdk.security.jgss jdk.unsupported jdk.unsupported.desktop
 jdk.xml.dom jdk.zipfs"
OS_ARCH="x86_64"
OS_NAME="Darwin"
SOURCE=".:git:7917f11551e8+"

// JDK
IMPLEMENTOR="Oracle Corporation"
JAVA_VERSION="19"
JAVA_VERSION_DATE="2022-09-20"
LIBC="default"
MODULES="java.base java.compiler java.datatransfer java.xml java.prefs java.desktop
 java.instrument java.logging java.management java.security.sasl java.naming
```

```
 java.rmi java.management.rmi java.net.http java.scripting java.security.jgss
 java.transaction.xa java.sql java.sql.rowset java.xml.crypto java.se java.smartcardio
 jdk.accessibility jdk.internal.jvmstat jdk.attach jdk.charsets jdk.zipfs jdk.compiler
 jdk.crypto.ec jdk.crypto.cryptoki jdk.dynalink jdk.internal.ed jdk.editpad
 jdk.hotspot.agent jdk.httpserver jdk.incubator.concurrent jdk.incubator.vector
 jdk.internal.le jdk.internal.opt jdk.internal.vm.ci jdk.internal.vm.compiler
 jdk.internal.vm.compiler.management jdk.jartool jdk.javadoc jdk.jcmd jdk.management
 jdk.management.agent jdk.jconsole jdk.jdeps jdk.jdwp.agent jdk.jdi jdk.jfr jdk.jlink
 jdk.jpackage jdk.jshell jdk.jsobject jdk.jstatd jdk.localedata jdk.management.jfr
 jdk.naming.dns jdk.naming.rmi jdk.net jdk.nio.mapmode jdk.random jdk.sctp
 jdk.security.auth jdk.security.jgss jdk.unsupported jdk.unsupported.desktop
 jdk.xml.dom"
OS_ARCH="x86_64"
OS_NAME="Darwin"
SOURCE=".:git:53b4a11304b0 open:git:967a28c3d85f"
```

Example PURL

The following is an example package URL for an Oracle Java release.

```
Sample PURL:
# Amazon Corretto
pkg:generic/amazon/amazon-corretto@21.0.3
# Oracle JDK
pkg:generic/oracle/jdk@11.0.16
# Oracle JRE
pkg:generic/oracle/jre@20
```

Nginx ecosystem collection

Supported applications

- Nginx

Supported platforms

The following are supported platforms.

Linux

- /usr/sbin/nginx
- /usr/local/nginx
- /usr/local/etc/nginx
- /usr/local/nginx/nginx
- /usr/local/nginx/sbin/nginx
- /etc/nginx/nginx

Windows

- C:\nginx\nginx.exe
- C:\nginx-x.y.z\nginx.exe (x.y.z is an arbitrary version)

MacOS

- /usr/local/etc/nginx/nginx

Key features

This collection examines binaries to extract embedded version information. It searches for version strings in the binary executable `.rodata` section (for ELF binaries on Linux), `.rdata` section (for PE binaries on Windows), or `__ctring` section (for MachO binaries).

Example version string

The following is an example of a version string embedded in an Nginx binary.

```
nginx version: nginx/1.27.5
```

Version `1.27.5` is extracted to identify the Nginx version.

Example PURL

The following is an example package URL for Nginx.

```
Sample PURL: pkg:generic/nginx/nginx@1.27.5
```

Node.JS runtime collection

Supported applications

- node runtime binary for Node.JS

Supported artifacts

- MacOS and Linux – node binary detection through binary details installed with `asdf`, `fnm`, `nvm`, `volta`, or official Node.JS containers.

Example MacOS and Linux paths

The following is an example of paths for MacOS and Linux.

```
NVM:   ~/.nvm/, /usr/local/nvm
FNM:   ~/.local/share/fnm/
ASDF:  ~/.asdf/
MISE:  ~/.local/share/mise/
VOLTA: ~/.volta/
```

Example PURL

The following is an example package URL for Node.JS.

```
Sample PURL: pkg:generic/nodejs/node@20.18.0
```

OpenSSH collection

Supported applications

- OpenSSH (Version 9)
- OpenSSH (Version 10)

Supported platforms Linux/MacOS

- `/usr/sbin/sshd`
- `/usr/local/sbin/sshd`

Supported platforms Windows

- `C:/Windows/System32/OpenSSH/sshd.exe`
- `C:/Program Files/OpenSSH/sshd.exe`
- `C:/Program Files (x86)/OpenSSH/sshd.exe`
- `C:/OpenSSH/sshd.exe`

Key features

- Examines `sshd` binaries to extract embedded verion information.
- Looks for version strings in the binary executable `.rodata` section (for ELF binaries on Linux, `__cstring` section (for Mach-O binaries on MacOs), or `.rdata` section (for PE binaries on Windows).

Example version string

The following is an example of a version string embedded in an OpenSSH binary.

```
OpenSSH_9.9p2
```

Version `9.9p2` is extracted to identify the OpenSSH version.

Example PURL

The following is an example package URL for OpenSSH.

```
Sample PURL: pkg:generic/openssh/openssh@9.9p2
```

OpenSSL ecosystem Collection

Supported applications

Support for OpenSSL libraries and development packages is limited to software built with official OpenSSL for 3.0.0 releases and above. The software also must follow semantic versioning. Custom or forked OpenSSL variants and versions lower than 3.0.0 are not supported.

The Amazon Inspector SBOM Generator extracts key package information for each installed OpenSSL instance.

Key features

- Extracts the base SEMVER version string from the OpenSSL header file
- Identifies the directory path containing the OpenSSL installation

The Amazon Inspector SBOM Generator looks for OpenSSL installations by scanning for the `opensslv.h` file in common installation paths across platforms.

Example installation path for Linux/Unix

The following is an example installation path for Linux/Unix.

```
/usr/local/include/openssl/opensslv.h
/usr/local/ssl/include/openssl/opensslv.h
/usr/local/openssl/include/openssl/opensslv.h
/usr/local/opt/openssl/include/openssl/opensslv.h
/usr/include/openssl/opensslv.h
```

The Amazon Inspector SBOM Generator extracts version information by parsing the `opensslv.h` file and looking for the version definitions.

```
# define OPENSSL_VERSION_MAJOR  3
# define OPENSSL_VERSION_MINOR  4
# define OPENSSL_VERSION_PATCH  0
```

Example PURL

The following is an example package URL for the OpenSSL version.

```
Sample PURL: pkg:generic/openssl/openssl@3.4.0
```

Oracle Database Server collection

Supported applications

- Oracle Database

Supported platforms Linux

- `/opt/oracle`
- `/u01/app/oracle`

Key features

- Examines Oracle binaries to extract embedded version information.
- Looks for version strings in the binary executable `.rodata` section (for ELF binaries on Linux).
- Version information follows a specific format that includes the RDBMS version string.

Example version string

The following is an example of a version string embedded in an Oracle Database binary:

```
RDBMS_23.7.0.25.01DBRU_LINUX.X64_240304
```

Version `23.7.0.25.01` is extracted to identify the Oracle Database version.

Example PURL

The following is an example package URL for Oracle Database

```
Sample PURL: pkg:generic/oracle/database@23.7.0.25.01
```

WordPress ecosystem collection

Supported components

- WordPress core
- WordPress plugins
- WordPress themes

Key features

- WordPress core – parses the `/wp-includes/version.php` file to extract version value from $wp_version variable.
- WordPress plugins – parses the `/wp-content/plugins/<WordPress Plugin>/readme.txt` file or `/wp-content/plugins/<WordPress Plugin>/readme.md` file to extract the `Stable` tag as the version string.
- WordPress themes – parses the `/wp-content/themes/<WordPress Theme>/style.css` file to extract the version from the version metadata.

Example `version.php` file

The following is an example of a WordPress core `version.php` file.

```
// truncated

/**
* The WordPress version string.
*
* Holds the current version number for WordPress core. Used to bust caches
* and to enable development mode for scripts when running from the /src directory.
*
* @global string $wp_version
*/
$wp_version = '6.5.5';

// truncated
```

Example PURL

The following is an example package URL for WordPress core.

```
Sample PURL: pkg:generic/wordpress/core/wordpress@6.5.5
```

Example `readme.txt` file

The following is an example of a WordPress plugin `readme.txt` file.

```
=== Plugin Name ===
Contributors: (this should be a list of wordpress.org userid's)
Donate link: https://example.com/
Tags: tag1, tag2
Requires at least: 4.7
Tested up to: 5.4
Stable tag: 4.3
Requires PHP: 7.0
License: GPLv2 or later
License URI: https://www.gnu.org/licenses/gpl-2.0.html

// truncated
```

Example PURL

The following is an example package URL for a WordPress plugin.

```
Sample PURL: pkg:generic/wordpress/plugin/exclusive-addons-for-elementor@1.0.0
```

Example `style.css` file

The following is an example of a WordPress theme `style.css` file.

```
/*
Author: the WordPress team
Author URI: https://wordpress.org
Description: Twenty Twenty-Four is designed to be flexible, versatile and applicable
 to any website. Its collection of templates and patterns tailor to different needs,
 such as presenting a business, blogging and writing or showcasing work. A multitude
 of possibilities open up with just a few adjustments to color and typography. Twenty
 Twenty-Four comes with style variations and full page designs to help speed up the
 site building process, is fully compatible with the site editor, and takes advantage
 of new design tools introduced in WordPress 6.4.
Requires at least: 6.4
Tested up to: 6.5
Requires PHP: 7.0
Version: 1.2
License: GNU General Public License v2 or later
```

```
License URI: http://www.gnu.org/licenses/gpl-2.0.html
Text Domain: twentytwentyfour
Tags: one-column, custom-colors, custom-menu, custom-logo, editor-style, featured-
images, full-site-editing, block-patterns, rtl-language-support, sticky-post,
 threaded-comments, translation-ready, wide-blocks, block-styles, style-variations,
 accessibility-ready, blog, portfolio, news
*/
```

Example PURL

The following is an example package URL for a WordPress theme.

```
Sample PURL: pkg:generic/wordpress/theme/avada@1.0.0
```

Amazon Inspector SBOM Generator SSL/TLS certificate scans

This section describes how to use the Amazon Inspector SBOM Generator to inventory SSL/TLS certificates. The Sbomgen inventories SSL/TLS certificates by searching for certificates in predefined locations as well as directories provided by the user. The feature is intended to enable users to inventory SSL/TLS certificates as well as identify expired certificates. CA certificates will also appear in the output inventory.

Using Sbomgen certificate scans

You can enable SSL/TLS certificate inventory collection using the `--scanners certificates` argument. Certificate scans can be combined with any of the other scanners. By default, certificate scans are not enabled.

The Sbomgen searches different locations for certificates depending on the artifact being scanned. In all cases, the Sbomgen attempts to extract certificates in files with the following extensions.

```
.pem
.crt
.der
.p7b
.p7m
.p7s
.p12
```

```
.pfx
```

The localhost artifact type

If the certificate scanner is enabled and the artifact type is localhost, the Sbomgen recursively looks for certificates in `/etc/*/ssl`, `/opt/*/ssl/certs`, `/usr/local/*/ssl`, and `/var/lib/*/certs`, where `*` is not empty. User-provided directories will be searched recursively, regardless of what directories are named. Typically, CA/system certificates are not placed in these paths. These certificates are often in folders named `pki`, `ca-certs`, or `CA`. They also may appear in the default localhost scan paths.

Directory and container artifacts

When scanning directory or container artifacts, the Sbomgen searches for certificates located anywhere on the artifact.

Example certificate scan commands

The following contains example certificate scan commands. One generates an SBOM that only contains certificates in a local directory. Another generates an SBOM that contains certificates and Alpine, Debian, and Rhel packages in a local directory. Another generates an SBOM that contains certificates found in common certificate locations.

```
# generate SBOM only containing certificates in a local directory
./inspector-sbomgen directory --path ./project/ --scanners certificates

# generate SBOM only containing certificates and Alpine, Debian, and Rhel OS packages
 in a local directory
./inspector-sbomgen directory --path ./project/ --scanners certificates,dpkg,alpine-
apk,rhel-rpm

# generate SBOM only containing certificates, taken from common localhost certificate
 locations
./inspector-sbomgen localhost --scanners certificates
```

Example file component

The following contains two example certificate finding components. When a certificate expires, you can view an extra property that identifies the expiration date.

```
{
      "bom-ref": "comp-2",
```

```
      "type": "file",
      "name": "certificate:expired.pem",
      "properties": [
            {
                "name": "amazon:inspector:sbom_generator:certificate_finding:IN-
CERTIFICATE-001",
                "value": "expired:2015-06-06T11:59:59Z"
            },
            {
                "name": "amazon:inspector:sbom_generator:source_path",
                "value": "/etc/ssl/expired.pem"
            }
      ]
},
{
      "bom-ref": "comp-3",
      "type": "file",
      "name": "certificate:unexpired.pem",
      "properties": [
            {
                "name": "amazon:inspector:sbom_generator:source_path",
                "value": "/etc/ssl/unexpired.pem"
            }
      ]
}
```

Example vulnerability response component

Running the Amazon Inspector SBOM Generator with the `--scan-sbom` flag sends the resulting SBOM to Amazon Inspector for vulnerability scanning. The following is an example of a certificate finding for a vulnerability response component.

```
{
    "advisories": [
        {
            "url": "https://aws.amazon.com/inspector/"
        },
        {
            "url": "https://docs.aws.amazon.com/wellarchitected/latest/security-pillar/
sec_protect_data_transit_encrypt.html"
        }
    ],
    "affects": [
```

```
        {
            "ref": "comp-2"
        }
    ],
    "analysis": {
        "state": "in_triage"
    },
    "bom-ref": "vuln-1",
    "created": "2025-04-17T18:48:20Z",
    "cwes": [
        324,
        298
    ],
    "description": "Expired Certificate: The associated certificate(s) are no longer
 valid. Replace certificate in order to reduce risk.",
    "id": "IN-CERTIFICATE-001",
    "properties": [
        {
            "name": "amazon:inspector:sbom_scanner:priority",
            "value": "standard"
        },
        {
            "name": "amazon:inspector:sbom_scanner:priority_intelligence",
            "value": "unverified"
        }
    ],
    "published": "2025-04-17T18:48:20Z",
    "ratings": [
        {
            "method": "other",
            "severity": "medium",
            "source": {
                "name": "AMAZON_INSPECTOR",
                "url": "https://aws.amazon.com/inspector/"
            }
        }
    ],
    "source": {
        "name": "AMAZON_INSPECTOR",
        "url": "https://aws.amazon.com/inspector/"
    },
    "updated": "2025-04-17T18:48:20Z"
}
```

Amazon Inspector SBOM Generator license collection

The Amazon Inspector SBOM Generator helps track license information in a software bill of materials (SBOM). It collects license information from supported packages across operating systems and programming languages. With standardized license expressions in your generated SBOM, you can understand your licensing obligations.

Collect license information

Example command

The following example shows how to collect license information from a directory.

```
./inspector-sbomgen directory --path /path/to/your/directory/ --collect-licenses
```

SBOM component example

The following example shows a component entry in the generated SBOM.

```
"components": [
    {
      "bom-ref": "comp-2",
      "type": "application",
      "name": "sample-js-pkg",
      "version": "1.2.3",
      "licenses": [
        {
          "expression": "Apache-2.0 AND (MIT OR GPL-2.0-only)"
        }
      ],
      "purl": "pkg:npm/sample-js-pkg@1.2.3",
    }
  ]
```

Supported packages

The following programming languages and operating system packages are supported for license collection.

Target	Package manager	License information source	Type
Alma Linux	RPM	• /usr/lib/sysimage/rpm/rpmdb.sqlite • /usr/lib/sysimage/rpm/Packages • /usr/lib/sysimage/rpm/Packages.db • /var/lib/rpm/rpmdb.sqlite • /var/lib/rpm/Packages • /var/lib/rpm/Packages.db	OS
Amazon Linux	RPM	• /usr/lib/sysimage/rpm/rpmdb.sqlite • /usr/lib/sysimage/rpm/Packages • /usr/lib/sysimage/rpm/Packages.db • /var/lib/rpm/rpmdb.sqlite • /var/lib/rpm/Packages • /var/lib/rpm/Packages.db	OS
CentOS	RPM	• /usr/lib/sysimage/rpm/rpmdb.sqlite • /usr/lib/sysimage/rpm/Packages	OS

Target	Package manager	License information source	Type
		• /usr/lib/sysimage/rpm/Packages.db • /var/lib/rpm/rpmdb.sqlite • /var/lib/rpm/Packages • /var/lib/rpm/Packages.db	
Fedora	RPM	• /usr/lib/sysimage/rpm/rpmdb.sqlite • /usr/lib/sysimage/rpm/Packages • /usr/lib/sysimage/rpm/Packages.db • /var/lib/rpm/rpmdb.sqlite • /var/lib/rpm/Packages • /var/lib/rpm/Packages.db	OS

Target	Package manager	License information source	Type
OpenSUSE	RPM	• /usr/lib/sysimage/rpm/rpmdb.sqlite • /usr/lib/sysimage/rpm/Packages • /usr/lib/sysimage/rpm/Packages.db • /var/lib/rpm/rpmdb.sqlite • /var/lib/rpm/Packages • /var/lib/rpm/Packages.db	OS
Oracle Linux	RPM	• /usr/lib/sysimage/rpm/rpmdb.sqlite • /usr/lib/sysimage/rpm/Packages • /usr/lib/sysimage/rpm/Packages.db • /var/lib/rpm/rpmdb.sqlite • /var/lib/rpm/Packages • /var/lib/rpm/Packages.db	OS

Target	Package manager	License information source	Type
Photon OS	RPM	• /usr/lib/sysimage/rpm/rpmdb.sqlite • /usr/lib/sysimage/rpm/Packages • /usr/lib/sysimage/rpm/Packages.db • /var/lib/rpm/rpmdb.sqlite • /var/lib/rpm/Packages • /var/lib/rpm/Packages.db	OS
RHEL	RPM	• /usr/lib/sysimage/rpm/rpmdb.sqlite • /usr/lib/sysimage/rpm/Packages • /usr/lib/sysimage/rpm/Packages.db • /var/lib/rpm/rpmdb.sqlite • /var/lib/rpm/Packages • /var/lib/rpm/Packages.db	OS

Target	Package manager	License information source	Type
Rocky Linux	RPM	• /usr/lib/sysimage/rpm/rpmdb.sqlite • /usr/lib/sysimage/rpm/Packages • /usr/lib/sysimage/rpm/Packages.db • /var/lib/rpm/rpmdb.sqlite • /var/lib/rpm/Packages • /var/lib/rpm/Packages.db	OS
SLES	RPM	• /usr/lib/sysimage/rpm/rpmdb.sqlite • /usr/lib/sysimage/rpm/Packages • /usr/lib/sysimage/rpm/Packages.db • /var/lib/rpm/rpmdb.sqlite • /var/lib/rpm/Packages • /var/lib/rpm/Packages.db	OS
Alpine Linux	APK	`/lib/apk/db/installed`	OS
Chainguard	APK	`/lib/apk/db/installed`	OS

Target	Package manager	License information source	Type
Debian	DPKG	`/usr/share/doc/*/copyright`	OS
Ubuntu	DPKG	`/usr/share/doc/*/copyright`	OS
Node.js	Javascript	`node_modules/*/package.json`	Programing language
PHP	Composer package	• `composer.lock` • `/vendor/composer/installed.json`	Programing language
Go	Go	`LICENSE`	Programing language
Python	Python/Egg/Wheel	• `.dist-info/METADATA` • `.egg-info` • `.egg-info/PKG-INFO`	Programing language
Ruby	RubyGem	`*.gemspec`	Programing language
Rust	crate	`Cargo.toml`	Programming language

License expression standardization

The SPDX license expressions format provides accurate representation of licensing terms found in open source software. The Amazon Inspector SBOM Generator standardizes all license information into SPDX license expressions through rules described in this section. The rules provide consistency and compatibility across licensing information.

SPDX short form identifier mapping

All license names are mapped to SPDX short form identifiers. For example, `MIT License` is shortened to `MIT`.

Multiple license combination

You can combine more than one license with the `AND` operator. The following is an example command showing how to format your command.

```
MIT AND Apache-2.0
```

Custom license prefix

Custom licenses are prefixed with `LicenseRef`, such as `LicenseRef-CompanyPrivate`.

Custom exception prefix

Custom exceptions are prefixed with `AdditionRef-`, such as `AdditionRef-CustomException`.

What is a package URL?

A package URL or PURL is a standardized format used to identify software packages, components, and libraries across different package management systems. The format makes it easier to track, analyze, and manage dependencies in software projects, particularly when generating a Software Bill of Materials (SBOMs).

PURL structure

The PURL structure is similar to a URL and is composed of multiple components:

- `pkg` – The literal prefix
- `type`– The package type
- `namespace` – The grouping
- `name` – The package name
- `version` – The package version
- `qualifiers` – Extra key-value pairs

- `subpath` – The filepath in the package

Example PURL

The following is an example of how a PURL might look.

```
pkg:<type>/<namespace>/<name>@<version>?<qualifiers>#<subpath>
```

The generic PURL

A generic PURL is used to represent software packages and components that don't fit into established package ecosystems, such as npm, pypi, or maven. It identifies software components and captures metadata that might not align with specific package management systems. A generic PURL is useful for a variety of software projects, from compiled binaries to platforms, such as Apache and WordPress. Its allows it to be applied across a wide range of use cases, including compiled binaries, web platforms, and custom software distributions.

Key use cases

- Supports compiled binaries and is useful for Go and Rust
- Supports web platforms, such as Apache and WordPress, where a package might not be associated with traditional package managers.
- Supports custom legacy software by allowing organizations to reference internally developed software or systems lacking formal packages.

Example format

The following is an example of the generic PURL format.

```
pkg:generic/<namespace>/<name>@<version>?<qualifiers>
```

Additional examples of the generic PURL format

The following are additional examples of the generic PURL format.

Compiled Go binary

The following represents the `inspector-sbomgen binary` compiled with a Go.

```
pkg:generic/inspector-sbomgen?go_toolchain=1.22.5
```

Compiled Rust binary

The following represents the `myrustapp` binary compiled with Rust.

```
pkg:generic/myrustapp?rust_toolchain=1.71.0
```

Apache project

The following refers to an http project under the Apache namespace.

```
pkg:generic/apache/httpd@1.0.0
```

WordPress software

The following refers to a core WordPress software.

```
pkg:generic/wordpress/core/wordpress@6.0.0
```

WordPress theme

The following refers to a custom WordPress theme.

```
pkg:generic/wordpress/theme/mytheme@1.0.0
```

WordPress plugin

The following refers to a custom WordPress plugin.

```
pkg:generic/wordpress/plugin/myplugin@1.0.0
```

Handling unresolved or non-standard version references in the Amazon Inspector SBOM Generator

The Amazon Inspector SBOM Generator locates and parses supported artifacts within a system by identifying dependencies directly from source files. It's not a package manager and does

not resolve version ranges, infer versions based on dynamic references, or handle registry lookups. It collects dependencies only as they're defined in project source artifacts. In many cases, dependencies in package manifests, such as `package.json`, `pom.xml`, or `requirements.txt`, are specified using unresolved or range-based versions. This topic includes examples of how these dependencies might look.

Recommendations

The Amazon Inspector SBOM Generator extracts dependencies from source artifacts, but doesn't resolve or interpret version ranges or dynamic references. For more accurate vulnerability scanning and SBOMs, we recommend using resolved, semantic version identifiers in project dependencies.

Java

For Java, Maven projects can use version ranges to define dependencies in the `pom.xml` file.

```
<dependency>
    <groupId>org.inspector</groupId>
    <artifactId>inspector-api</artifactId>
    <version>(,1.0]</version>
</dependency>
```

The range specifies that any version up to and including 1.0 is acceptable. However, if a version is not a resolved version, the Amazon Inspector SBOM Generator won't collect it because it cannot be mapped to a specific release.

JavaScript

For JavaScript, the `package.json` file can include version ranges that resemble the following:

```
"dependencies": {
    "ky": "^1.2.0",
    "registry-auth-token": "^5.0.2",
    "registry-url": "^6.0.1",
    "semver": "^7.6.0"
}
```

The ^ operator specifies that any version greater than or equal to the specified version is acceptable. However, if the specified version is not a resolved version, the Amazon Inspector SBOM Generator won't collect it becaue doing so can lead to false positives during vulnerability detection.

Python

For Python, the `requirements.txt` file can include entries with a boolean expression.

```
requests>=1.0.0
```

The >= operator specifies that any version greater than or equal to `1.0.0` is acceptable. Because this particular expression doesn't specify an exact version, the Amazon Inspector SBOM Generator cannot reliably collect a version for vulnerability analysis.

The Amazon Inspector SBOM Generator doesn't support non-standard or ambiguous version identifiers, such as beta, latest, or snapshot.

```
pkg:maven/org.example.com/testmaven@1.0.2%20Beta-RC-1_Release
```

> **Note**
>
> The use of a non-standard suffix, such as Beta-RC-1_Release, isn't compliant with standard semantic versioning and cannot be assessed for vulnerabilities within the Amazon Inspector detection engine.

Using CycloneDX namespaces with Amazon Inspector

Amazon Inspector provides you with CycloneDX namespaces and property names that you can use with SBOMs. This section describes all of the custom key/value properties that might be added to components in CycloneDX SBOMs. For more information, see CycloneDX property taxonomy on the GitHub website.

`amazon:inspector:sbom_scanner` namespace taxonomy

The Amazon Inspector Scan API uses the `amazon:inspector:sbom_scanner` namespace and has the following properties:

Property	Description
amazon:inspector:sbom_scanner:cisa_kev_date_added	Indicates when the vulnerability was added to the CISA Known Exploited Vulnerabilities catalog.
amazon:inspector:sbom_scanner:cisa_kev_date_due	Indicates when the vulnerability fix is due according to the CISA Known Exploited Vulnerabilities catalog.
amazon:inspector:sbom_scanner:critical_vulnerabilities	Count of the total number of critical severity vulnerabilities found in the SBOM.
amazon:inspector:sbom_scanner:exploit_available	Indicates if an exploit is available for the given vulnerability.
amazon:inspector:sbom_scanner:exploit_last_seen_in_public	Indicates when an exploit was last seen in public for the given vulnerability.
amazon:inspector:sbom_scanner:fixed_version: *component_bom_ref*	Provides the fixed version of the indicated component for the given vulnerability.
amazon:inspector:sbom_scanner:high_vulnerabilities	Count of the total number of high severity vulnerabilities found in the SBOM.
amazon:inspector:sbom_scanner:info	Provides scan context for a given component , for example: "Component scanned: no vulnerabilities found."
amazon:inspector:sbom_scanner:is_malicious	Indicates if OpenSSF identifies affected components as malicious.
amazon:inspector:sbom_scanner:low_vulnerabilities	Count of the total number of low severity vulnerabilities found in the SBOM.
amazon:inspector:sbom_scanner:medium_vulnerabilities	Count of the total number of medium severity vulnerabilities found in the SBOM.

Property	Description
amazon:inspector:sbom_scanner:path	The path to the file that yields the subject package information.
amazon:inspector:sbom_scanner:priority	The recommended priority for fixing a given vulnerability. The values in descending order are "IMMEDIATE", "URGENT", "MODERATE", and "STANDARD".
amazon:inspector:sbom_scanner:priority_intelligence	The quality of intelligence used to determine the priority for a given vulnerability. The values include "VERIFIED" or "UNVERIFIED".
amazon:inspector:sbom_scanner:warning	Provides context for a why a given component was not scanned, for example: "Component skipped: no purl provided."

amazon:inspector:sbom_generator namespace taxonomy

The Amazon Inspector SBOM Generator uses the amazon:inspector:sbom_generator namespace and has the following properties:

Property	Description
amazon:inspector:sbom_generator:cpu_architecture	The CPU architecture of the system being inventoried (x86_64).
amazon:inspector:sbom_generator:ec2:instance_id	The Amazon EC2 instance ID.
amazon:inspector:sbom_generator:ec2:instance_type	The Amazon EC2 Instance type
amazon:inspector:sbom_generator:live_patching_enabled	A boolean value indicating whether live patching is enabled on Amazon EC2 Amazon Linux.

Property	Description
amazon:inspector:sbom_generator:live_patched_cves	A list of CVEs patched through live patching on Amazon EC2 Amazon Linux.
amazon:inspector:sbom_generator:dockerfile_finding: *inspector_finding_id*	Indicates that an Amazon Inspector finding in a component is related to Dockerfile checks.
amazon:inspector:sbom_generator:image_id	The hash belonging to the container image config file (also known as the Image ID).
amazon:inspector:sbom_generator:image_arch	The architecture of the container image.
amazon:inspector:sbom_generator:image_author	The author of the container image.
amazon:inspector:sbom_generator:image_docker_version	The docker version used to build the container image.
amazon:inspector:sbom_generator:is_duplicate_package	Indicates that the subject package was found by more than one file scanner.
amazon:inspector:sbom_generator:duplicate_purl	Indicates the duplicated package PURL found by another scanner.
amazon:inspector:sbom_generator:kernel_name	The kernel name of the system being inventoried.
amazon:inspector:sbom_generator:kernel_version	The kernel version of the system being inventoried.
amazon:inspector:sbom_generator:kernel_component	A boolean value indicating whether a subject package is a kernel component
amazon:inspector:sbom_generator:running_kernel	A boolean value that indicates if a subject package is the running kernel

Property	Description
amazon:inspector:sbom_generator:layer_diff_id	The hash of the uncompressed container image layer.
amazon:inspector:sbom_generator:replaced_by	The value that replaces the current Go module.
amazon:inspector:sbom_generator:os_hostname	The hostname of the system being inventoried.
amazon:inspector:sbom_generator:source_file_scanner	The scanner that found the file that contains package information, for example: /var/lib/dpkg/status .
amazon:inspector:sbom_generator:source_package_collector	The collector that extracted the package name and version from a specific file.
amazon:inspector:sbom_generator:source_path	The path to the file that the subject package information was extracted from.
amazon:inspector:sbom_generator:file_size_bytes	Indicates file size of a given artifact.
amazon:inspector:sbom_generator:unresolved_version	Indicates a version string that has not been resolved by package manager..
amazon:inspector:sbom_generator:experimental:transitive_dependency	Indicates indirect dependencies from a package manager.

Integrating Amazon Inspector scans into your CI/CD pipeline

The Amazon Inspector CI/CD integration utilizes the Amazon Inspector SBOM Generator and Amazon Inspector Scan API to produce vulnerability reports for container images. The Amazon Inspector SBOM Generator creates a software bill of materials (SBOM) for archives, container images, directories, local systems, and compiled Go and Rust binaries. The Amazon Inspector Scan API scans the SBOM to create a report with details about detected vulnerabilities. You can integrate Amazon Inspector container image scans with your CI/CD pipeline to scan for software vulnerabilities and produce vulnerability reports, which allow you to investigate and remediate risks before deployment. To set up your CI/CD integration, you can use plugins or create a custom CI/CD integration using the Amazon Inspector SBOM Generator and Amazon Inspector Scan API.

Topics

Plugin integration

Amazon Inspector provides plugins for supported CI/CD solutions. You can install these plugins from their respective marketplaces and then use them to add Amazon Inspector Scans as a build step in your pipeline. The plugin build step runs the Amazon Inspector SBOM generator on the image you supply, and then runs the Amazon Inspector Scan API on the generated SBOM.

The following is an overview of how an Amazon Inspector CI/CD integration works through plugins:

1. You configure an AWS account to allow access to the Amazon Inspector Scan API. For instructions, see Setting up an AWS account to use the Amazon Inspector CI/CD integration.
2. You install the Amazon Inspector plugin from the marketplace.
3. You install and configure the Amazon Inspector SBOM Generator binary. For instructions, see Amazon Inspector SBOM Generator.
4. You add Amazon Inspector Scans as a build step in your CI/CD pipeline and configure the scan.
5. When you run a build, the plugin takes your container image as input and then runs the Amazon Inspector SBOM Generator on the image to generate a CycloneDX compatible SBOM.
6. From there, the plugin sends the generated SBOM to an Amazon Inspector Scan API endpoint which assesses each SBOM component for vulnerabilities.
7. The Amazon Inspector Scan API response is transformed into a vulnerability report in CSV, SBOM JSON, and HTML formats. The report contains details about any vulnerabilities that Amazon Inspector found.

Supported CI/CD solutions

Amazon Inspector currently supports the following CI/CD solutions. For complete instructions on setting up the CI/CD integration using a plugin, select the plugin for your CI/CD solution:

- Jenkins plugin
- TeamCity plugin
- GitHub actions

Custom integration

If Amazon Inspector does not provide plugins for your CI/CD solution, you can create your own custom CI/CD integration using a combination of the Amazon Inspector SBOM Generator and the Amazon Inspector Scan API. You can also use a custom integration to fine-tune scans using the options available through Amazon Inspector SBOM Generator.

The following is an overview of how a custom Amazon Inspector CI/CD integration works:

1. You configure an AWS account to allow access to the Amazon Inspector Scan API. For instructions, see Setting up an AWS account to use the Amazon Inspector CI/CD integration.
2. You install and configure the Amazon Inspector SBOM Generator binary. For instructions, see Amazon Inspector SBOM Generator.
3. You use the Amazon Inspector SBOM Generator to generate a CycloneDX compatible SBOM for your container image.
4. You use the Amazon Inspector Scan API on the generated SBOM to produce a vulnerability report.

For instructions on setting up a custom integration, see Creating a custom CI/CD pipeline integration with Amazon Inspector Scan.

Setting up an AWS account to use the Amazon Inspector CI/CD integration

To use the Amazon Inspector CI/CD integration, you must sign up for an AWS account. The AWS account must have an IAM role that grants your CI/CD pipleline access to the Amazon Inspector Scan API. Complete the tasks in the following topics to sign up for an AWS account, create an administrator user, and configure an IAM role for CI/CD integration.

> **Note**
>
> If you already signed up for an AWS account, you can skip to Configure an IAM role for CI/CD integration.

Topics

- Sign up for an AWS account
- Create a user with administrative access
- Configure an IAM role for CI/CD integration

Sign up for an AWS account

If you do not have an AWS account, complete the following steps to create one.

To sign up for an AWS account

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

   Part of the sign-up procedure involves receiving a phone call or text message and entering a verification code on the phone keypad.

   When you sign up for an AWS account, an *AWS account root user* is created. The root user has access to all AWS services and resources in the account. As a security best practice, assign administrative access to a user, and use only the root user to perform tasks that require root user access.

AWS sends you a confirmation email after the sign-up process is complete. At any time, you can view your current account activity and manage your account by going to https://aws.amazon.com/ and choosing **My Account**.

Create a user with administrative access

After you sign up for an AWS account, secure your AWS account root user, enable AWS IAM Identity Center, and create an administrative user so that you don't use the root user for everyday tasks.

Secure your AWS account root user

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

   For help signing in by using root user, see Signing in as the root user in the *AWS Sign-In User Guide*.
2. Turn on multi-factor authentication (MFA) for your root user.

   For instructions, see Enable a virtual MFA device for your AWS account root user (console) in the *IAM User Guide*.

Create a user with administrative access

1. Enable IAM Identity Center.

For instructions, see Enabling AWS IAM Identity Center in the *AWS IAM Identity Center User Guide*.

2. In IAM Identity Center, grant administrative access to a user.

   For a tutorial about using the IAM Identity Center directory as your identity source, see Configure user access with the default IAM Identity Center directory in the *AWS IAM Identity Center User Guide*.

Sign in as the user with administrative access

- To sign in with your IAM Identity Center user, use the sign-in URL that was sent to your email address when you created the IAM Identity Center user.

  For help signing in using an IAM Identity Center user, see Signing in to the AWS access portal in the *AWS Sign-In User Guide*.

Assign access to additional users

1. In IAM Identity Center, create a permission set that follows the best practice of applying least-privilege permissions.

   For instructions, see Create a permission set in the *AWS IAM Identity Center User Guide*.

2. Assign users to a group, and then assign single sign-on access to the group.

   For instructions, see Add groups in the *AWS IAM Identity Center User Guide*.

Configure an IAM role for CI/CD integration

To integrate Amazon Inspector scanning into your CI/CD pipeline you need to create an IAM policy that allows access to the Amazon Inspector Scan API that scans the software bill of materials (SBOMs). Then, you can attach that policy to an IAM role that your account can assume to run the Amazon Inspector Scan API.

1. Sign in to the AWS Management Console and open the IAM console at https://console.aws.amazon.com/iam/.
2. In the navigation pane of the IAM console, **Policies** and then choose **Create Policy**.

3. In **Policy Editor** select **JSON** and paste the following statement:

   JSON

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Sid": "VisualEditor0",
            "Effect": "Allow",
            "Action": "inspector-scan:ScanSbom",
            "Resource": "*"
        }
    ]
}
```

4. Choose **Next**.
5. Give the policy a name, for example `InspectorCICDscan-policy`, and add an optional description, then choose **Create Policy**. This policy will be attached to the role you'll create in the next steps.
6. In the navigation pane of the IAM console, select **Roles** and then select **Create New Role**.
7. For **Trusted entity type** choose **Custom trust policy** and paste the following policy:

   JSON

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Effect": "Allow",
            "Principal": {
                "AWS": "arn:aws:iam::111122223333:root"
            },
            "Action": "sts:AssumeRole",
            "Condition": {}
        }
    ]
}
```

8. Choose **Next**.
9. In **Add permissions** search for and select the policy you created earlier, then choose **Next**.
10. Give the role a name, for example `InspectorCICDscan-role`, and add an optional description, then choose `Create Role`.

Amazon Inspector Dockerfile checks

This section describes how to use the Amazon Inspector SBOM Generator to scan Dockerfiles and Docker container images for misconfigurations that introduce security vulnerabilities.

Topics

Using Sbomgen Dockerfile checks

Dockerfile checks are conducted automatically when a file named `Dockerfile` or `*.Dockerfile` is discovered and when a Docker image is scanned.

You can disable Dockerfile checks using the `--skip-scanners dockerfile` argument. You also can combine Dockerfile checks with any available scanner, such as OS or 3rd-party packages.

Example Docker check commands

The following example commands show how to generate SBOMs for Dockerfiles and Docker container images, as well as for OS and 3rd-party packages.

```
# generate SBOM only containing Docker checks for Dockerfiles in a local directory
./inspector-sbomgen directory --path ./project/ --scanners dockerfile

# generate SBOM for container image will by default include Dockerfile checks
./inspector-sbomgen container --image image:tag

# generate SBOM only containing Docker checks for specific Dockerfiles and Alpine,
 Debian, and Rhel OS packages in a local directory
/inspector-sbomgen directory --path ./project/ --scanners dockerfile,dpkg,alpine-
apk,rhel-rpm
```

```
# generate SBOM only containing Docker checks for specific Dockerfiles in a local
 directory
./inspector-sbomgen directory --path ./project/ --skip-scanners dockerfile
```

Example file component

The following is an example of a Dockerfile finding for a file component.

```
{
     "bom-ref": "comp-2",
      "name": "dockerfile:data/docker/Dockerfile",
      "properties": [
        {
          "name": "amazon:inspector:sbom_scanner:dockerfile_finding:IN-DOCKER-001",
          "value": "affected_lines:27-27"
        }
      ],
      "type": "file"
    },
```

Example vulnerability response component

The following is an example of a Dockerfile finding for a vulnerability response component.

```
{
      "advisories": [
        {
          "url": "https://docs.docker.com/develop/develop-images/instructions/"
        }
      ],
      "affects": [
        {
          "ref": "comp-2"
        }
      ],
      "analysis": {
        "state": "in_triage"
      },
      "bom-ref": "vuln-13",
      "created": "2024-03-27T14:36:39Z",
      "description": "apt-get layer caching: Using apt-get update alone in a RUN
 statement causes caching issues and subsequent apt-get install instructions to fail.",
```

```
      "id": "IN-DOCKER-001",
      "ratings": [
        {
          "method": "other",
          "severity": "info",
          "source": {
            "name": "AMAZON_INSPECTOR",
            "url": "https://aws.amazon.com/inspector/"
          }
        }
      ],
      "source": {
        "name": "AMAZON_INSPECTOR",
        "url": "https://aws.amazon.com/inspector/"
      },
      "updated": "2024-03-27T14:36:39Z"
    },
```

Note

If you invoke Sbomgen without the `--scan-sbom` flag, you can only view raw Dockerfile findings.

Supported Dockerfile checks

Sbomgen Dockerfile checks are supported for the following:

- The Sudo binary package
- Debian APT utilities
- Hardcoded secrets
- Root containers
- Runtime weakening command flags
- Runtime weakening environment variables

Each of these Dockerfile checks has a corresponding severity rating, which is noted at the top of the following topics.

> **Note**
>
> The recommendations described in the following topics are based on industry best practices.

The Sudo binary package

> **Note**
>
> The severity rating for this check is **Info**.

We recommend not installing or using the Sudo binary package because it has unpredictable TTY and signal-forwarding behavior. For more information, see User in the Docker Docs website. If your use case requires functionality similar the Sudo binary package, we recommened using Gosu.

Debian APT utilities

> **Note**
>
> The severity rating for this check is **High**.

The following are best practices for using Debian APT utilities.

Combining `apt-get` commands in a single Run statement to avoid caching issues

We recommend combining `apt-get` commands in a single RUN statement inside of your Docker container. Using `apt-get update` by itself results in caching issues and subsequent `apt-get install` instructions to fail. For more information, see apt-get in the Docker Docs website.

> **Note**
>
> The caching behavior described also can occur inside of your Docker container if the Docker container software is out of date.

Using the APT command-line utility in a non-interactive manner

We recommend using the APT command-line utility interactively. The APT command-line utility is designed as an end-user tool, and its behavior changes between versions. For more information, see Script Usage and differences from other APT tools in the Debian website.

Hard-coded secrets

> **Note**
>
> The severity rating for this check is **Critical**.

Confidential information in your Dockerfile is considered a hard-coded secret. The following hard-coded secrets can be identified through Sbomgen Docker file checks:

- AWS access key IDs – `AKIAIOSFODNN7EXAMPLE`
- AWS secret keys – `wJalrXUtnFEMI/K7MDENG/bPxRfiCYEXAMPLEKEY`
- DockerHub personal access tokens – `dckr_pat_thisisa27charexample1234567`
- GitHub personal access tokens – `ghp_examplev61wY7Pj1YnotrealUoY123456789`
- GitLab personal access tokens – `glpat-12345example12345678`

Root containers

> **Note**
>
> The severity marker for this check is **Info**.

We recommend running Docker containers without root privileges. For containerized workloads that cannot run without root privileges, we recommend building your applications using a principle with the least amount of privileges. For more information, see User in the Docker Docs website.

Runtime weakening environment variables

> **Note**
>
> The severity rating for this check is **High**.

Several command line utilities or programming language runtimes support bypassing secure defaults, which allows execution through insecure methods.

NODE_TLS_REJECT_UNAUTHORIZED=0

When Node.js processes run with `NODE_TLS_REJECT_UNAUTHORIZED` set to `0`, TLS certificate validation is disabled. For more information, see NODE_TLS_REJECT_UNAUTHORIZED=0 in the Node.js website.

GIT_SSL_NO_VERIFY=*

When git command line processes run with `GIT_SSL_NO_VERIFY` set, Git skips verifying TLS certificates. For more information, see Environment variables in the Git website.

PIP_TRUSTED_HOST=*

When Python pip command line processes run with `PIP_TRUSTED_HOST` set, Pip skips verifying TLS certificates on the specified domain. For more information, see --trusted-host in the Pip website.

NPM_CONFIG_STRICT_SSL=false

When Node.js npm command line processes run with `NPM_CONFIG_STRICT_SSL` set to false, the Node Package Manager (npm) utility will connect to the NPM registry without validating TLS certificates. For more information, see strict-ssl in the npm Docs website website.

Runtime weakening command flags

> **Note**
>
> The severity rating for this check is **High**.

Similar to runtime weakening environment variables, several command line utilities or programming language runtimes support bypassing secure defaults, which allows execution through insecure methods.

`npm --strict-ssl=false`

When Node.js npm command line processes are run with the `--strict-ssl=false` flag, the Node Package Manager (npm) utility connects to the NPM registry without validating TLS certificates. For more information, see strict-ssl in the npm Docs website.

`apk --allow-untrusted`

When the Alpine Package Keeper utility is run with the `--allow-untrusted` flag, `apk` will install packages with no or untrusted signatures. For more information, see the following repository in the Apline website.

`apt-get --allow-unauthenticated`

When the Debian `apt-get` package utility is run with the `--allow-unauthenticated` flag, `apt-get` doesn't check package validity. For more information, see APT-Get(8) in the Debian website.

`pip --trusted-host`

When the Python pip utility is run with the `--trusted-host` flag, the specified hostname will bypass TLS certificate validation. For more information, see --trusted-host in the Pip website.

`rpm --nodigest, --nosignature, --noverify, --nofiledigest`

When the RPM-based package manager `rpm` is run with the `--nodigest`, `--nosignature`, `--noverify`, and `--nofiledigest` flags, the RPM package manager doesn't validate package headers, signatures, or files when installing a package. For more information, see the following RPM manual page in the RPM website.

`yum-config-manager --setopt=sslverify false`

When the RPM-based package manager `yum-config-manager` is run with the `--setopt=sslverify` flag set to false, the YUM package manager doesn't validate TLS certificates. For more information, see the following YUM manual page in the Man7 website.

`yum --nogpgcheck`

When the RPM-based package manager `yum` is run with the `--nogpgcheck` flag, the YUM package manager skips checking GPG signatures on packages. For more information, see yum(8) in the Man7 website.

`curl --insecure, curl -k`

When `curl` is run with the `--insecure` or `-k` flag, TLS certificate validation is disabled. By default, every secure connection that `curl` makes is verified to be secure before the transfer takes place. This option makes `curl` skip the verification step and proceed without checking. For more information, see the following Curl manual page in the Curl website.

`wget --no-check-certificate`

When `wget` is run with the `--no-check-certificate` flag, TLS certificate validation is disabled. For more information, see the following Wget manual page in the GNU website.

Removal checks for OS package databases within containers

> **Note**
>
> The severity rating for this check is **Info**.

The removal of an operating system package database reduces the ability to scan the complete inventory of a container image's software. These databases should be left intact during container build steps.

Removal checks for an OS package database is supported for the following package managers:

Alpine Package Keeper (APK)

Container images utilizing the APK package manager for installed software must make sure APK system files are not removed during a build. For more information, see the APK manpages system files documentation on the Arch Linux website.

Debian Package Manager (DPKG)

Containers utilizing the DPKG package manager, such as Debian, Ubuntu, or Distroless based images, must make sure the DPKG database are not removed during a container build. For more information, see the DPKG manpages system files documentation on the Ubuntu website.

RPM Package Manager (RPM)

Containers utilizing the RPM Package Manager (yum/dnf), such as Amazon Linux or Red Hat Enterprise Linux, must make sure the RPM database is not removed during a container build. For more information, see the RPM manpages system files documentation on the RPM website.

Creating a custom CI/CD pipeline integration with Amazon Inspector Scan

We recommend that you use the Amazon Inspector CI/CD plugins if the Amazon Inspector CI/CD plugins are available for your CI/CD solution. If the Amazon Inspector CI/CD plugins aren't available for your CI/CD solution, you can use a combination of the Amazon Inspector SBOM

Generator and the Amazon Inspector Scan API to create a custom CI/CD integration. The following steps describe how to create a custom CI/CD pipeline integration with Amazon Inspector Scan.

> **Tip**
>
> You can use the Amazon Inspector SBOM Generator (Sbomgen) to skip Step 3 and Step 4 if you want to generate and scan your SBOM in a single command.

Step 1. Configuring AWS account

Configure an AWS account that provides access to the Amazon Inspector Scan API. For more information, see Setting up an AWS account to use the Amazon Inspector CI/CD integration.

Step 2. Installing Sbomgen binary

Install and configure the Sbomgen binary. For more information, see Installing Sbomgen.

Step 3. Using Sbomgen

Use the Sbomgen to create an SBOM file for a container image that you want to scan.

You can use the following example. Replace *image:id* with the name of the image that you to scan. Replace *sbom_path.json* with the location where you want to save the SBOM output.

Example

```
./inspector-sbomgen container --image image:id -o sbom_path.json
```

Step 4. Calling the Amazon Inspector Scan API

Call the `inspector-scan` API to scan the generated SBOM and provide a vulnerability report.

You can use the following example. Replace *sbom_path.json* with the location of a valid CycloneDX compatible SBOM file. Replace *ENDPOINT* with the API endpoint for the AWS Region where you're currently authenticated. Replace *REGION* with the corresponding Region.

Example

```
aws inspector-scan scan-sbom --sbom file://sbom_path.json --endpoint
ENDPOINT-URL --region REGION
```

For a complete list of AWS Regions and endpoints, see Regions and endpoints.

(Optional) Step 5. Generate and scan SBOM in a single command

> **Note**
>
> Only complete this step if you skipped Step 3 and Step 4.

Generate and scan your SBOM in a single command using the `--scan-bom` flag.

You can use the following example. Replace *`image:id`* with the name of the image that you want to scan. Replace *`profile`* with the corresponding profile. Replace *`REGION`* with the corresponding Region. Replace */tmp/scan.json* with the location of the scan.json file in the tmp directory.

Example

```
./inspector-sbomgen container --image image:id --scan-sbom --aws-profile profile --aws-region REGION -o /tmp/scan.json
```

For a complete list of AWS Regions and endpoints, see Regions and endpoints.

API output formats

The Amazon Inspector Scan API can output a vulnerability report in CycloneDX 1.5 format or Amazon Inspector finding JSON. The default can be changed using the `--output-format` flag.

Example of CycloneDX 1.5 format output


```
{
  "status": "SBOM parsed successfully, 1 vulnerabilities found",
  "sbom": {
    "bomFormat": "CycloneDX",
    "specVersion": "1.5",
    "serialNumber": "urn:uuid:0077b45b-ff1e-4dbb-8950-ded11d8242b1",
    "metadata": {
      "properties": [
        {
          "name": "amazon:inspector:sbom_scanner:critical_vulnerabilities",
          "value": "1"
        },
        {
```

```
          "name": "amazon:inspector:sbom_scanner:high_vulnerabilities",
          "value": "0"
        },
        {
          "name": "amazon:inspector:sbom_scanner:medium_vulnerabilities",
          "value": "0"
        },
        {
          "name": "amazon:inspector:sbom_scanner:low_vulnerabilities",
          "value": "0"
        }
      ],
      "tools": [
        {
          "name": "CycloneDX SBOM API",
          "vendor": "Amazon Inspector",
          "version": "empty:083c9b00:083c9b00:083c9b00"
        }
      ],
      "timestamp": "2023-06-28T14:15:53.760Z"
    },
    "components": [
      {
        "bom-ref": "comp-1",
        "type": "library",
        "name": "log4j-core",
        "purl": "pkg:maven/org.apache.logging.log4j/log4j-core@2.12.1",
        "properties": [
          {
            "name": "amazon:inspector:sbom_scanner:path",
            "value": "/home/dev/foo.jar"
          }
        ]
      }
    ],
    "vulnerabilities": [
      {
        "bom-ref": "vuln-1",
        "id": "CVE-2021-44228",
        "source": {
          "name": "NVD",
          "url": "https://nvd.nist.gov/vuln/detail/CVE-2021-44228"
        },
        "references": [
```

```
          {
            "id": "SNYK-JAVA-ORGAPACHELOGGINGLOG4J-2314720",
            "source": {
              "name": "SNYK",
              "url": "https://security.snyk.io/vuln/SNYK-JAVA-
ORGAPACHELOGGINGLOG4J-2314720"
            }
          },
          {
            "id": "GHSA-jfh8-c2jp-5v3q",
            "source": {
              "name": "GITHUB",
              "url": "https://github.com/advisories/GHSA-jfh8-c2jp-5v3q"
            }
          }
        ],
        "ratings": [
          {
            "source": {
              "name": "NVD",
              "url": "https://www.first.org/cvss/v3-1/"
            },
            "score": 10.0,
            "severity": "critical",
            "method": "CVSSv31",
            "vector": "AV:N/AC:L/PR:N/UI:N/S:C/C:H/I:H/A:H"
          },
          {
            "source": {
              "name": "NVD",
              "url": "https://www.first.org/cvss/v2/"
            },
            "score": 9.3,
            "severity": "critical",
            "method": "CVSSv2",
            "vector": "AC:M/Au:N/C:C/I:C/A:C"
          },
          {
            "source": {
              "name": "EPSS",
              "url": "https://www.first.org/epss/"
            },
            "score": 0.97565,
            "severity": "none",
```

```
            "method": "other",
            "vector": "model:v2023.03.01,date:2023-06-27T00:00:00+0000"
          },
          {
            "source": {
              "name": "SNYK",
              "url": "https://security.snyk.io/vuln/SNYK-JAVA-
ORGAPACHELOGGINGLOG4J-2314720"
            },
            "score": 10.0,
            "severity": "critical",
            "method": "CVSSv31",
            "vector": "AV:N/AC:L/PR:N/UI:N/S:C/C:H/I:H/A:H/E:H"
          },
          {
            "source": {
              "name": "GITHUB",
              "url": "https://github.com/advisories/GHSA-jfh8-c2jp-5v3q"
            },
            "score": 10.0,
            "severity": "critical",
            "method": "CVSSv31",
            "vector": "AV:N/AC:L/PR:N/UI:N/S:C/C:H/I:H/A:H"
          }
        ],
        "cwes": [
          400,
          20,
          502
        ],
        "description": "Apache Log4j2 2.0-beta9 through 2.15.0 (excluding security
 releases 2.12.2, 2.12.3, and 2.3.1) JNDI features used in configuration, log messages,
 and parameters do not protect against attacker controlled LDAP and other JNDI related
 endpoints. An attacker who can control log messages or log message parameters can
 execute arbitrary code loaded from LDAP servers when message lookup substitution is
 enabled. From log4j 2.15.0, this behavior has been disabled by default. From version
 2.16.0 (along with 2.12.2, 2.12.3, and 2.3.1), this functionality has been completely
 removed. Note that this vulnerability is specific to log4j-core and does not affect
 log4net, log4cxx, or other Apache Logging Services projects.",
        "advisories": [
          {
            "url": "https://www.intel.com/content/www/us/en/security-center/advisory/
intel-sa-00646.html"
          },
```

```
          {
            "url": "https://support.apple.com/kb/HT213189"
          },
          {
            "url": "https://msrc-blog.microsoft.com/2021/12/11/microsofts-response-to-
cve-2021-44228-apache-log4j2/"
          },
          {
            "url": "https://logging.apache.org/log4j/2.x/security.html"
          },
          {
            "url": "https://www.debian.org/security/2021/dsa-5020"
          },
          {
            "url": "https://cert-portal.siemens.com/productcert/pdf/ssa-479842.pdf"
          },
          {
            "url": "https://www.oracle.com/security-alerts/alert-cve-2021-44228.html"
          },
          {
            "url": "https://www.oracle.com/security-alerts/cpujan2022.html"
          },
          {
            "url": "https://cert-portal.siemens.com/productcert/pdf/ssa-714170.pdf"
          },
          {
            "url": "https://lists.fedoraproject.org/archives/list/package-
announce@lists.fedoraproject.org/message/M5CSVUNV4HWZZXGOKNSK6L7RPM7BOKIB/"
          },
          {
            "url": "https://cert-portal.siemens.com/productcert/pdf/ssa-397453.pdf"
          },
          {
            "url": "https://cert-portal.siemens.com/productcert/pdf/ssa-661247.pdf"
          },
          {
            "url": "https://lists.fedoraproject.org/archives/list/package-
announce@lists.fedoraproject.org/message/VU57UJDCFIASIO35GC55JMKSRXJMCDFM/"
          },
          {
            "url": "https://www.oracle.com/security-alerts/cpuapr2022.html"
          },
          {
            "url": "https://twitter.com/kurtseifried/status/1469345530182455296"
```

```
          },
          {
            "url": "https://tools.cisco.com/security/center/content/
CiscoSecurityAdvisory/cisco-sa-apache-log4j-qRuKNEbd"
          },
          {
            "url": "https://lists.debian.org/debian-lts-announce/2021/12/msg00007.html"
          },
          {
            "url": "https://www.kb.cert.org/vuls/id/930724"
          }
        ],
        "created": "2021-12-10T10:15:00Z",
        "updated": "2023-04-03T20:15:00Z",
        "affects": [
          {
            "ref": "comp-1"
          }
        ],
        "properties": [
          {
            "name": "amazon:inspector:sbom_scanner:exploit_available",
            "value": "true"
          },
          {
            "name": "amazon:inspector:sbom_scanner:exploit_last_seen_in_public",
            "value": "2023-03-06T00:00:00Z"
          },
          {
            "name": "amazon:inspector:sbom_scanner:cisa_kev_date_added",
            "value": "2021-12-10T00:00:00Z"
          },
          {
            "name": "amazon:inspector:sbom_scanner:cisa_kev_date_due",
            "value": "2021-12-24T00:00:00Z"
          },
          {
            "name": "amazon:inspector:sbom_scanner:fixed_version:comp-1",
            "value": "2.15.0"
          }
        ]
      }
    ]
  }
```

```
}
```

Example of Inspector format output

```
                        {
  "status": "SBOM parsed successfully, 1 vulnerability found",
  "inspector": {
    "messages": [
      {
        "name": "foo",
        "purl": "pkg:maven/foo@1.0.0", // Will not exist in output if missing in sbom
        "info": "Component skipped: no rules found."
      }
    ],
    "vulnerability_count": {
      "critical": 1,
      "high": 0,
      "medium": 0,
      "low": 0
    },
    "vulnerabilities": [
      {
        "id": "CVE-2021-44228",
        "severity": "critical",
        "source": "https://nvd.nist.gov/vuln/detail/CVE-2021-44228",
        "related": [
          "SNYK-JAVA-ORGAPACHELOGGINGLOG4J-2314720",
          "GHSA-jfh8-c2jp-5v3q"
        ],
        "description": "Apache Log4j2 2.0-beta9 through 2.15.0 (excluding security
 releases 2.12.2, 2.12.3, and 2.3.1) JNDI features used in configuration, log messages,
 and parameters do not protect against attacker controlled LDAP and other JNDI related
 endpoints. An attacker who can control log messages or log message parameters can
 execute arbitrary code loaded from LDAP servers when message lookup substitution is
 enabled. From log4j 2.15.0, this behavior has been disabled by default. From version
 2.16.0 (along with 2.12.2, 2.12.3, and 2.3.1), this functionality has been completely
 removed. Note that this vulnerability is specific to log4j-core and does not affect
 log4net, log4cxx, or other Apache Logging Services projects.",
        "references": [
          "https://www.intel.com/content/www/us/en/security-center/advisory/intel-
sa-00646.html",
          "https://support.apple.com/kb/HT213189",
```

```
          "https://msrc-blog.microsoft.com/2021/12/11/microsofts-response-to-
cve-2021-44228-apache-log4j2/",
          "https://logging.apache.org/log4j/2.x/security.html",
          "https://www.debian.org/security/2021/dsa-5020",
          "https://cert-portal.siemens.com/productcert/pdf/ssa-479842.pdf",
          "https://www.oracle.com/security-alerts/alert-cve-2021-44228.html",
          "https://www.oracle.com/security-alerts/cpujan2022.html",
          "https://cert-portal.siemens.com/productcert/pdf/ssa-714170.pdf",
          "https://lists.fedoraproject.org/archives/list/package-
announce@lists.fedoraproject.org/message/M5CSVUNV4HWZZXGOKNSK6L7RPM7BOKIB/",
          "https://cert-portal.siemens.com/productcert/pdf/ssa-397453.pdf",
          "https://cert-portal.siemens.com/productcert/pdf/ssa-661247.pdf",
          "https://lists.fedoraproject.org/archives/list/package-
announce@lists.fedoraproject.org/message/VU57UJDCFIASIO35GC55JMKSRXJMCDFM/",
          "https://www.oracle.com/security-alerts/cpuapr2022.html",
          "https://twitter.com/kurtseifried/status/1469345530182455296",
          "https://tools.cisco.com/security/center/content/CiscoSecurityAdvisory/cisco-
sa-apache-log4j-qRuKNEbd",
          "https://lists.debian.org/debian-lts-announce/2021/12/msg00007.html",
          "https://www.kb.cert.org/vuls/id/930724"
        ],
        "created": "2021-12-10T10:15:00Z",
        "updated": "2023-04-03T20:15:00Z",
        "properties": {
          "cisa_kev_date_added": "2021-12-10T00:00:00Z",
          "cisa_kev_date_due": "2021-12-24T00:00:00Z",
          "cwes": [
            400,
            20,
            502
          ],
          "cvss": [
            {
              "source": "NVD",
              "severity": "critical",
              "cvss3_base_score": 10.0,
              "cvss3_base_vector": "AV:N/AC:L/PR:N/UI:N/S:C/C:H/I:H/A:H",
              "cvss2_base_score": 9.3,
              "cvss2_base_vector": "AC:M/Au:N/C:C/I:C/A:C"
            },
            {
              "source": "SNYK",
              "severity": "critical",
              "cvss3_base_score": 10.0,
```

```
              "cvss3_base_vector": "AV:N/AC:L/PR:N/UI:N/S:C/C:H/I:H/A:H/E:H"
            },
            {
              "source": "GITHUB",
              "severity": "critical",
              "cvss3_base_score": 10.0,
              "cvss3_base_vector": "AV:N/AC:L/PR:N/UI:N/S:C/C:H/I:H/A:H"
            }
          ],
          "epss": 0.97565,
          "exploit_available": true,
          "exploit_last_seen_in_public": "2023-03-06T00:00:00Z"
        },
        "affects": [
          {
            "installed_version": "pkg:maven/org.apache.logging.log4j/log4j-
core@2.12.1",
            "fixed_version": "2.15.0",
            "path": "/home/dev/foo.jar"
          }
        ]
      }
    ]
  }
}
```


Using the Amazon Inspector Jenkins plugin

The Jenkins plugin leverages the Amazon Inspector SBOM Generator binary and Amazon Inspector Scan API to produce detailed reports at the end of your build, so you can investigate and remediate risk before deployment. With the Amazon Inspector Jenkins plugin, you can add Amazon Inspector vulnerability scans to your Jenkins pipeline. Amazon Inspector vulnerability scans can be configured to pass or fail pipeline executions based on the number and severity of vulnerabilities detected. You can view the latest version of the Jenkins plugin in the Jenkins marketplace at https://plugins.jenkins.io/amazon-inspector-image-scanner/. The following steps describe how to set up the Amazon Inspector Jenkins plugin.

Important

Before completing the following steps, you must upgrade Jenkins to version 2.387.3 or higher for the plugin to run.

Step 1. Set up an AWS account

Configure an AWS account with an IAM role that allows access to the Amazon Inspector Scan API. For instructions, see Setting up an AWS account to use the Amazon Inspector CI/CD integration.

Step 2. Install the Amazon Inspector Jenkins Plugin

The following procedure describes how to install the Amazon Inspector Jenkins plugin from the Jenkins dashboard.

1. From the Jenkins dashboard, choose **Manage Jenkins**, and then choose **Manage Plugins**.
2. Choose **Available**.
3. From the **Available** tab, search for **Amazon Inspector Scans**, and then install the plugin.

(Optional) Step 3. Add docker credentials to Jenkins

Note

Only add docker credentials if the docker image is in a private repository. Otherwise, skip this step.

The following procedure describes how to add docker credentials to Jenkins from the Jenkins dashboard.

1. From the Jenkins dashboard, choose **Manage Jenkins**, **Credentials**, and then **System**.
2. Choose **Global credentials** and then **Add credentials**.
3. For **Kind**, select **Username with password**.
4. For **Scope**, select **Global (Jenkins, nodes, items, all child items, etc)**.
5. Enter your details, and then choose **OK**.

(Optional) Step 4. Add AWS credentials

> **Note**
>
> Only add AWS credentials if you want to authenticate based on an IAM user. Otherwise, skip this step.

The following procedure describes how to add AWS credentials from the Jenkins dashboard.

1. From the Jenkins dashboard, choose **Manage Jenkins**, **Credentials**, and then **System**.
2. Choose **Global credentials** and then **Add credentials**.
3. For **Kind**, select **AWS Credentials**.
4. Enter your details, including your **Access Key ID** and **Secret Access Key**, and then choose **OK**.

Step 5. Add CSS support in a Jenkins script

The following procedure describes how to add CSS support in a Jenkins script.

1. Restart Jenkins.
2. From the Dashboard, choose **Manage Jenkins**, **Nodes**, **Built-In Node**, and then **Script Console**.
3. In the text box, add the line `System.setProperty("hudson.model.DirectoryBrowserSupport.CSP", "")`, and then choose **Run**.

Step 6. Add Amazon Inspector Scan to your build

You can add Amazon Inspector Scan to your build by adding a build step in your project or by using the Jenkins declarative pipeline.

Amazon Inspector Scan to your build by adding a build step in your project

1. On the configuration page, scroll down to **Build Steps**, and choose **Add build step**. Then select **Amazon Inspector Scan**.

2. Choose between two inspector-sbomgen installation methods: **Automatic** or **Manual**. The automatic option allows the plugin to download the most recent version. It also makes sure you always have the latest features, security updates, and bug fixes.

   a. (Option 1) Choose **Automatic** to download the latest version of inspector-sbomgen. This option automatically detects the operating system and CPU architecture that's currently in use.

   b. (Option 2) Choose **Manual** if you want to set up the Amazon Inspector SBOM Generator binary for scanning. If you choose this method, make sure to provide the full path to a previously downloaded version of inspector-sbomgen.

   For more information, see Installing Amazon Inspector SBOM Generator (Sbomgen) in Amazon Inspector SBOM Generator.

3. Complete the following to finish configuring the Amazon Inspector Scan build step:

   a. Input your **Image Id**. The image can be local, remote, or archived. Image names should follow the Docker naming convention. If analyzing an exported image, provide the path to the expected tar file. See the following example Image Id paths:

      i. For local or remote containers: `NAME[:TAG|@DIGEST]`

      ii. For a tar file: `/path/to/image.tar`

   b. Select an **AWS Region** to send the scan request through.

   c. (Optional) For **Report Artifact Name**, enter a custom name for the artifacts generated during the build process. This helps uniquely identify and manage them.

   d. (Optional) For **Skip files**, specify one or more directories you want to exclude from scanning. Consider this option for directories that do not need to be scanned due to size.

   e. (Optional) For **Docker credentials**, select your Docker username. Do this only if your container image is in a private repository.

   f. (Optional) You can provide the following supported AWS authentication methods:

      i. (Optional) For **IAM role**, provide a role ARN (arn:aws:iam::*AccountNumber*:role/*RoleName*).

      ii. (Optional) For **AWS credentials**, specify AWS credentials to authenticate based on an IAM user.

iii. (Optional) For **AWS profile name**, provide the name of a profile to authenticate using a profile name.

g. (Optional) Select **Enable vulnerability thresholds**. With this option, you can determine whether your build fails if a scanned vulnerability exceeds a value. If all values equal `0`, the build succeeds, regardless of how many vulnerabilities are scanned. For the EPSS score, the value can be from 0 to 1. If a scanned vulnerability exceeds a value, the build fails, and all CVEs with an EPSS score above the value show in the console.

4. Choose **Save**.

Add Amazon Inspector Scan to your build using the Jenkins declarative pipeline

You can add Amazon Inspector Scan to your build using the Jenkins declarative pipeline automatically or manually.

To automatically download the SBOMGen declarative pipeline

- To add Amazon Inspector Scan to a build, use the following example syntax. Based on your preferred OS architecture of the Amazon Inspector SBOM Generator download, replace *SBOMGEN_SOURCE* with linuxAmd64 or linuxArm64. Replace *IMAGE_PATH* with the path to your image (such as *alpine:latest*), *IAM_ROLE* with the ARN of the IAM role you configured in step 1, and *ID* with your Docker credential ID if you are using a private repository. You can optionally enable vulnerability thresholds and specify values for each severity.

```
pipeline {
   agent any
   stages {
       stage('amazon-inspector-image-scanner') {
           steps {
               script {
               step([
               $class:
 'com.amazon.inspector.jenkins.amazoninspectorbuildstep.AmazonInspectorBuilder',
               sbomgenSource: 'SBOMGEN_SOURCE', // this can be linuxAmd64 or linuxArm64
               archivePath: 'IMAGE_PATH',
               awsRegion: 'REGION',
               iamRole: 'IAM ROLE',
               credentialId: 'Id', // provide empty string if image not in private
 repositories
```

```
                awsCredentialId: ''AWS ID;',
                awsProfileName: 'Profile Name',
                isThresholdEnabled: false,
                countCritical: 0,
                countHigh: 0,
                countLow: 10,
                countMedium: 5,
               ])
            }
        }
      }
   }
}
```

To manually download the SBOMGen declarative pipeline

- To add Amazon Inspector Scan to a build, use the following example syntax. Replace *SBOMGEN_PATH* with the path to the Amazon Inspector SBOM Generator you installed in step 3, *IMAGE_PATH* with the path to your image (such as *alpine:latest*), *IAM_ROLE* with the ARN of the IAM role you configured in step 1, and *ID* with your Docker credential ID if you are using a private repository. You can optionally enable vulnerability thresholds and specify values for each severity.

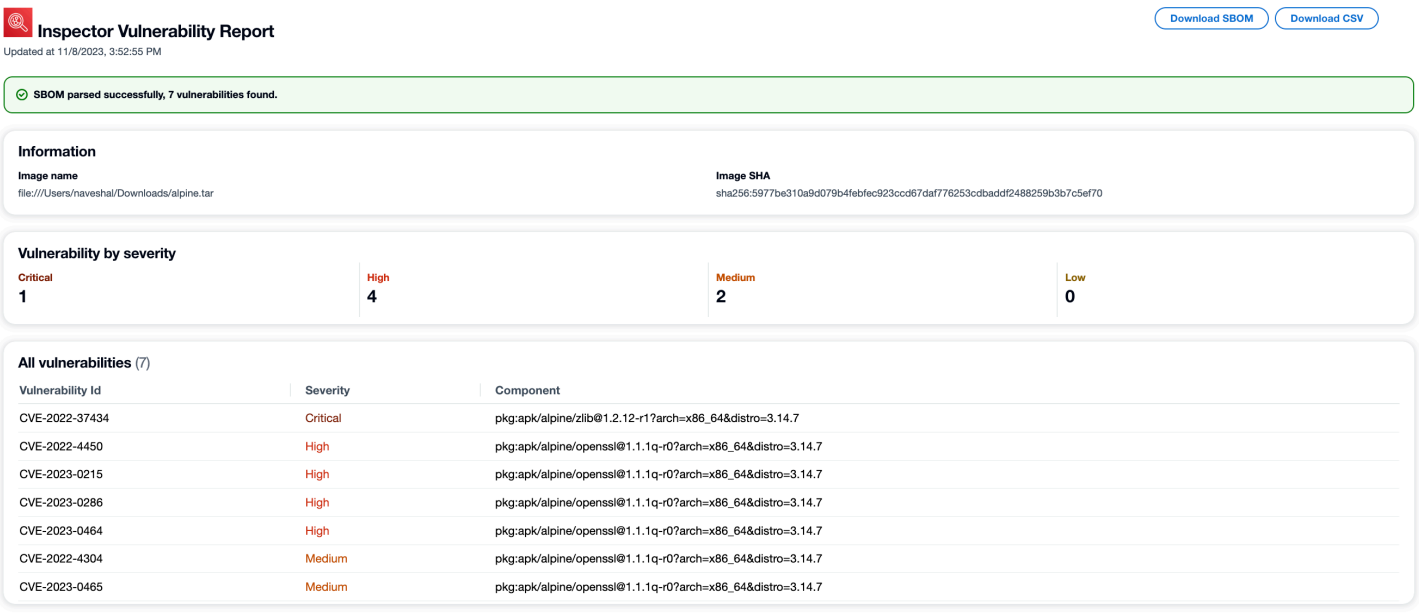
> **Note**
>
> Place Sbomgen in Jenkins directory, and provide the path to the Jenkins directory in plugin (such as */opt/folder/arm64/inspector-sbomgen*).

```
pipeline {
    agent any
    stages {
        stage('amazon-inspector-image-scanner') {
            steps {
                script {
                step([
                $class:
 'com.amazon.inspector.jenkins.amazoninspectorbuildstep.AmazonInspectorBuilder',
                sbomgenPath: 'SBOMGEN_PATH',
                archivePath: 'IMAGE_PATH',
```

```
                awsRegion: 'REGION',
                iamRole: 'IAM ROLE',
                awsCredentialId: ''AWS ID;',
                credentialId: 'Id;', // provide empty string if image not in private
repositories
                awsProfileName: 'Profile Name',
                isThresholdEnabled: false,
                countCritical: 0,
                countHigh: 0,
                countLow: 10,
                countMedium: 5,
               ])
            }
          }
        }
    }
 }
```

Step 7. View your Amazon Inspector vulnerability report

1. Complete a new build of your project.
2. After the build completes, select an output format from the results. If you select HTML, you have the option to download a JSON SBOM or CSV version of the report. The following shows an example of an HTML report:



Troubleshooting

The following are common errors you can encounter when using the Amazon Inspector Scan plugin for Jenkins.

Failed to load credentials or sts exception error

Error:

```
InstanceProfileCredentialsProvider(): Failed to load credentials or sts exception.
```

Resoultion

Get `aws_access_key_id` and `aws_secret_access_key` for your AWS account. Set up `aws_access_key_id` and `aws_secret_access_key` in `~/.aws/credentials`.

Failed to load image from tarball, local, or remote sources

Error:

```
2024/10/16 02:25:17 [ImageDownloadFailed]: failed to load image from tarball, local, or remote sources.
```

> **Note**
>
> This error can occur if the Jenkins plugin cannot read the container image, the container image isn't found in the Docker engine, and the container image isn't found in the remote container registry.

Resolution:

Verify the following;

- The Jenkins plugin user has read permissions to the image you wish to scan.
- The image you wish to scan is present in Docker engine.
- Your remote image URL is correct.

- You are authenticated to the remote registry (if applicable).

Inspector-sbomgen path error

Error:

```
Exception:com.amazon.inspector.jenkins.amazoninspectorbuildstep.exception.Sbomge
There was an issue running inspector-sbomgen, is /opt/inspector/inspector-
sbomgen the correct path?
```

Resolution:

Complete the following procedure to resolve the issue.

1. Place correct OS architecture Inspector-sbomgen in Jenkins directory For more information, see Amazon Inspector SBOM Generator.
2. Grant executable permissions to the binary using the following command: `chmod +x inspector-sbomgen`.
3. Provide correct Jenkins machine path in plugin, such as `/opt/folder/arm64/inspector-sbomgen`.
4. Save config, and execute Jenkins job.

Using the Amazon Inspector TeamCity plugin

The Amazon Inspector TeamCity plugin leverages the Amazon Inspector SBOM Generator binary and Amazon Inspector Scan API to produce detailed reports at the end of your build, so you can investigate and remediate risk before deployment. With the Amazon Inspector TeamCity plugin, you can add Amazon Inspector vulnerability scans to your TeamCity pipeline. Amazon Inspector vulnerability scans can be configured to pass or fail pipeline executions based on the number and severity of vulnerabilities detected. You can view the latest version of the Amazon Inspector TeamCity plugin in the TeamCity marketplace at https://plugins.jetbrains.com/plugin/23236-amazon-inspector-scanner. For information about how to integrate Amazon Inspector Scan into your CI/CD pipeline, see Integrating Amazon Inspector scans into your CI/CD pipeline. For a list of operating systems and programming languages that Amazon Inspector supports, see Supported operating systems and programming languages. The following steps describe how to set up the Amazon Inspector TeamCity plugin.

1. **Set up an AWS account.**

   - Configure an AWS account with an IAM role that allows access to the Amazon Inspector Scan API. For instructions, see Setting up an AWS account to use the Amazon Inspector CI/CD integration.

2. **Install the Amazon Inspector TeamCity plugin.**

   a. From your dashboard, go to **Administration** > **Plugins**.

   b. Search for **Amazon Inspector Scans**.

   c. Install the plugin.

3. **Install the Amazon Inspector SBOM Generator.**

   - Install the Amazon Inspector SBOM Generator binary in your Teamcity server directory. For instructions, see Installing Sbomgen.

4. **Add an Amazon Inspector Scan build step to your project.**

   a. On the configuration page, scroll down to **Build Steps**, choose **Add build step**, and then select **Amazon Inspector Scan**.

   b. Configure the Amazon Inspector Scan build step by filling in following details:

      - Add a **Step name**.
      - Choose between two Amazon Inspector SBOM Generator installation methods: **Automatic** or **Manual**.
        - **Automatic** downloads the most recent version of Amazon Inspector SBOM Generator based on your system and CPU architecture.
        - **Manual** requires that you provide a complete path to a previously downloaded version of Amazon Inspector SBOM Generator.

        For more informaiton, see Installing Amazon Inspector SBOM Generator (Sbomgen) in Amazon Inspector SBOM Generator.
      - Input your **Image Id**. Your image can be local, remote, or archived. Image names should follow the Docker naming convention. If analyzing an exported image, provide the path to the expected tar file. See the following example Image Id paths:
        - For local or remote containers: `NAME[:TAG|@DIGEST]`
        - For a tar file: `/path/to/image.tar`
      - For **IAM Role** enter the ARN for the role you configured in step 1.

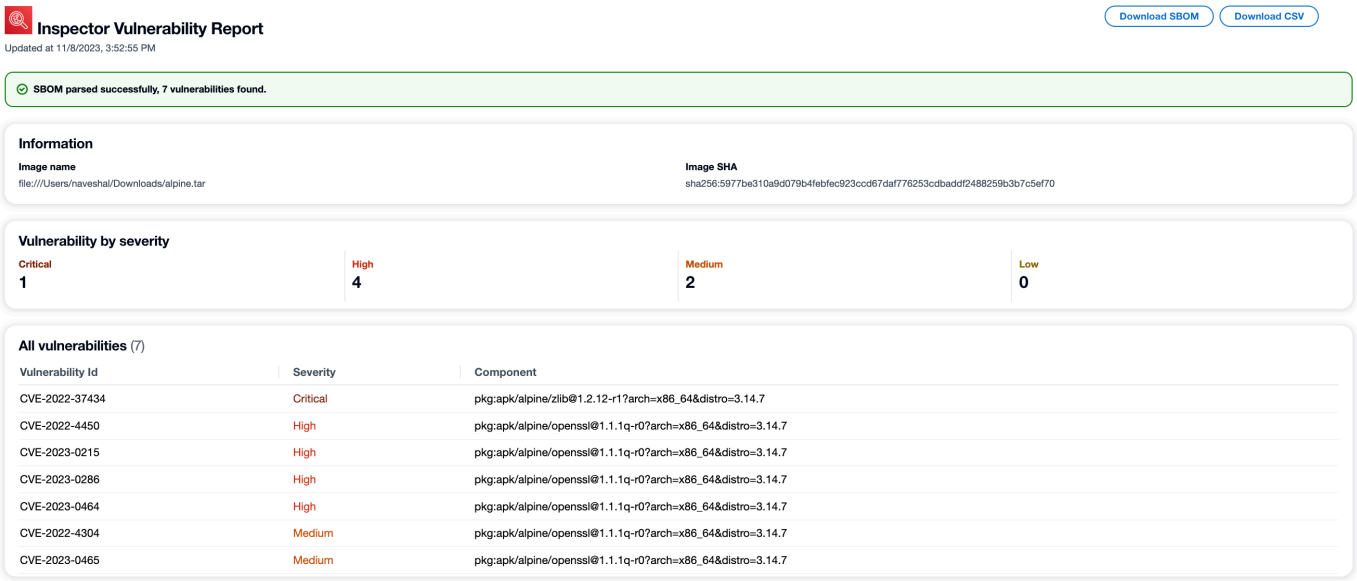
- Select an **AWS Region** to send the scan request through.
- (Optional) For **Docker Authentication** enter your **Docker Username** and **Docker Password**. Do this only if your container image is in a private repository.
- (Optional) For **AWS Authentication**, enter your AWS access key ID and AWS secret key. Do this only if you want to authenticate based on AWS credentials.
- (Optional) Specify the **Vulnerability thresholds** per severity. If the number you specify is exceeded during a scan the image build will fail. If the values are all `0` the build will succeed regardless of the number of vulnerabilities found.

c. Select **Save**.

5. **View your Amazon Inspector vulnerability report.**

a. Complete a new build of your project.

b. When the build completes select an output format from the results. When you select HTML you have the option to download a JSON SBOM or CSV version of the report. The following is an example of an HTML report:



Using Amazon Inspector with GitHub actions

You can use Amazon Inspector with GitHub actions to add Amazon Inspector vulnerability scans to your GitHub workflows. This leverages the Amazon Inspector SBOM Generator and Amazon Inspector Scan API to produce detailed reports at the end of your build, so you can investigate and

remediate risk before deployment. Amazon Inspector vulnerability scans can be configured to pass or fail workflows based on the number and severity of vulnerabilities detected. You can view the latest version of the Amazon Inspector action on the GitHub website. For information about how to integrate Amazon Inspector Scan into your CI/CD pipeline, see Integrating Amazon Inspector scans into your CI/CD pipeline. For a list of operating systems and programming languages that Amazon Inspector supports, see Supported operating systems and programming languages.

Using Amazon Inspector with GitLab components

You can use Amazon Inspector with GitLab CI/CD components to add Amazon Inspector vulnerability scans to your GitLab projects. This leverages the Amazon Inspector SBOM Generator and Amazon Inspector Scan API to produce detailed reports at the end of your build, so you can investigate and remediate risk before deployment. Amazon Inspector vulnerability scans can be configured to pass or fail workflows based on the number and severity of vulnerabilities detected. You can view the latest version of the Amazon Inspector component on the GitLab website. For information about how to integrate Amazon Inspector Scan into your CI/CD pipeline, see Integrating Amazon Inspector scans into your CI/CD pipeline. For a list of operating systems and programming languages that Amazon Inspector supports, see Supported operating systems and programming languages.

Using CodeCatalyst actions with Amazon Inspector

You can use Amazon Inspector with Amazon CodeCatalyst to add Amazon Inspector vulnerability scans to your CodeCatalyst workflows. This leverages the Amazon Inspector SBOM Generator and Amazon Inspector Scan API to produce detailed reports at the end of your build, so you can investigate and remediate risk before deployment. Amazon Inspector vulnerability scans can be configured to pass or fail workflows based on the number and severity of vulnerabilities detected. For information about how to integrate Amazon Inspector Scan into your CI/CD pipeline, see Integrating Amazon Inspector scans into your CI/CD pipeline. For a list of operating systems and programming languages that Amazon Inspector supports, see Supported operating systems and programming languages.

Using Amazon Inspector Scan actions with CodePipeline

You can use Amazon Inspector with AWS CodePipeline by adding vulnerability scans to your workflows. This integration leverages the Amazon Inspector SBOM Generator and Amazon

Inspector Scan API to produce detailed reports at the end of your build. The integration helps you investigate and remediate risk before deployment. The `InspectorScan` action is a managed compute action in CodePipeline that automates detecting and fixing security vulnerabilities in your open source code. You can use this action with application source code in your third-party repository, such as GitHub or Bitbucket Cloud, or with images for container applications. For more information, see InspectorScan invoke action reference in the *AWS CodePipeline User Guide*.

Assessing Amazon Inspector coverage of your AWS environment

You can assess Amazon Inspector coverage of your AWS environment from the **Account management** screen in the Amazon Inspector console, which shows details and statistics about the status of Amazon Inspector scans for your accounts and resources.

> **Note**
>
> If you're the delegated administrator for an organization, you can view details and statistics for all the accounts in the organization.

The following procedure describes how to assess coverage of your Amazon Inspector environment.

To assess Amazon Inspector coverage of your AWS environment

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. From the navigation pane, choose **Account management**.
3. To review coverage, choose one of the following tabs:
   - Choose **Accounts** to review account-level coverage.
   - Choose **Instances** to review coverage for Amazon Elastic Compute Cloud (Amazon EC2) instances.
   - Choose **Container repositories** to review coverage of Amazon Elastic Container Registry (Amazon ECR) repositories.
   - Choose **Container images** to review coverage for Amazon ECR container images.
   - Choose **Lambda functions** to review coverage for Lambda functions.

The following topics describe the information each of these tabs provide.

Topics

- Assessing coverage of Amazon ECR repositories
- Assessing coverage of Amazon ECR container images
- Assessing coverage of AWS Lambda functions

Assessing account-level coverage

If your account is not part of an organization or is not the delegated Amazon Inspector administrator account for an organization, the **Accounts** tab provides information about your account and the status of resource scanning for your account. On this tab, you can activate or deactivate scanning for all or only specific types of resources for your account. For more information, see Automated scan types in Amazon Inspector.

If your account is the delegated Amazon Inspector administrator account for an organization, the **Accounts** tab provides automatic activation settings for accounts in your organization, and it lists all the accounts in your organization. For each account, the list indicates whether Amazon Inspector is activated for the account and, if so, the resource scanning types that are activated for the account. As the delegated administrator, you can use this tab to change the automatic activation settings for your organization. You can also activate or deactivate specific types of resource scanning for individual member accounts. For more information, see Activating Amazon Inspector scans for member accounts.

Assessing coverage of Amazon EC2 instances

The **Instances** tab shows Amazon EC2 instances in your AWS environment. The lists are organized into groups on the following tabs:

- **All** – Shows all the instances in your environment. The **Status** column indicates the current scanning status for an instance.
- **Scanning** – Shows all the instances that Amazon Inspector is actively monitoring and scanning in your environment.
- **Not scanning** – Shows all the instances that Amazon Inspector is not monitoring and scanning in your environment. The **Reason** column indicates why Amazon Inspector is not monitoring and scanning an instance.

  An EC2 instance can appear on the **Not scanning** tab for any of several reasons. Amazon Inspector uses AWS Systems Manager (SSM) and the SSM Agent to automatically monitor and

scan your EC2 instances for vulnerabilities. If an instance does not have the SSM Agent running, does not have an AWS Identity and Access Management (IAM) role that supports Systems Manager, or is not running a supported operating system or architecture, Amazon Inspector cannot monitor and scan the instance. For more information, see Amazon EC2 instance scanning.

On each tab, the **Account** column specifies the AWS account that owns an instance.

EC2 instance tags – This column shows you the tags associated with the instance and can be used to determine if your instance has been excluded from scans by tags.

Operating system – This column shows you the operating system type, which can be `WINDOWS`, `MAC`, `LINUX`, or `UNKNOWN`.

Monitored using – This column shows whether Amazon Inspector is using the agent-based or agentless scan method on this instance.

Last scanned – This column shows you when Amazon Inspector last checked that resource for vulnerabilities. The frequency that Amazon Inspector performs scans depends on the scan method it's using to scan the instance.

To review additional details about an EC2 instance, choose the link in the **EC2 instance** column. Amazon Inspector then displays details about the instance and current findings for the instance. To review the details of a finding, choose the link in the **Title** column. For information about these details, see Viewing details for your Amazon Inspector findings.

Scanning status values for Amazon EC2 instances

For an Amazon Elastic Compute Cloud (Amazon EC2) instance, the possible **Status** values are:

- **Actively monitoring** – Amazon Inspector is continuously monitoring and scanning the instance.
- **Agentless instance storage limit exceeded** – Amazon Inspector uses this status when the combined size of all volumes attached to an instance is greater than 1200 GB, or an instance has more than 8 volumes attached to it.
- **Agentless instance collection time limit exceeded** – Amazon Inspector times out while trying to run an agentless scan on an instance.
- **EC2 instance stopped** – Amazon Inspector paused scanning for the instance because the instance is in a stopped state. Any existing findings will persist until the instance is terminated. If the instance is restarted, Amazon Inspector will automatically resume scanning for the instance.

- **Internal error** – An internal error occurred when Amazon Inspector attempted to scan the instance. Amazon Inspector will automatically address the error and resume scanning as soon as possible.
- **No inventory** – Amazon Inspector couldn't find the software application inventory to scan for the instance. The Amazon Inspector associations for the instance might have been deleted or they might have failed to run.

  To remediate this issue, use AWS Systems Manager to ensure that the `InspectorInventoryCollection-do-not-delete` association exists and its association status is successful. In addition, use AWS Systems Manager Fleet Manager to verify the software application inventory for the instance.
- **Pending disable** – Amazon Inspector has stopped scanning the instance. The instance is being disabled, pending completion of clean-up tasks.
- **Pending initial scan** – Amazon Inspector has queued the instance for an initial scan.
- **Resource terminated** – The instance was terminated. Amazon Inspector is currently cleaning up existing findings and coverage data for the instance.
- **Stale inventory** – Amazon Inspector wasn't able to collect an updated software application inventory that was captured within the past 7 days for the instance.

  To remediate this issue, use AWS Systems Manager to ensure that the required Amazon Inspector associations exist and are running for the instance. In addition, use AWS Systems Manager Fleet Manager to verify the software application inventory for the instance.
- **Unmanaged EC2 instance** – Amazon Inspector isn't monitoring or scanning the instance. The instance isn't managed by AWS Systems Manager.

  To remediate this issue, you can use the AWSSupport-TroubleshootManagedInstance runbook provided by AWS Systems Manager Automation. After you configure AWS Systems Manager to manage the instance, Amazon Inspector will automatically begin to continuously monitor and scan the instance.
- **Unsupported OS** – Amazon Inspector isn't monitoring or scanning the instance. The instance uses an operating system or architecture that Amazon Inspector doesn't support. For a list of operating systems that Amazon Inspector supports, see Amazon EC2 instances status values.
- **Actively monitoring with partial errors** – This status means that EC2 scanning is active, but there are errors associated with Amazon Inspector deep inspection for Linux-based Amazon EC2 instances. The possible deep inspections errors are:

- **Deep inspection package collection limit exceeded** – The instance has exceeded the 5000 package limit for Amazon Inspector deep inspection. To resume deep inspection for this instance, you can try to adjust the custom paths associated with the account.
- **Deep inspection daily ssm inventory limit exceeded** – The SSM agent couldn't send inventory to Amazon Inspector because the SSM quota for *Inventory data collected per instance per day* has already been reached for this instance. For more information, see Amazon EC2 Systems Manager endpoints and quotas.
- **Deep inspection collection time limit exceeded** – Amazon Inspector failed to extract the package inventory because the package collection time exceeding the maximum threshold of 15 minutes.
- **Deep inspection has no inventory** – The Amazon Inspector SSM pluginhasn't yet been able to collect an inventory of packages for this instance. This is usually the result of a pending scan, however, if this status persists after 6 hours, use Amazon EC2 Systems Manager to ensure that the required Amazon Inspector associations exist and are running for the instance.

For details about configuring the scanning settings for an EC2 instance, see Amazon EC2 instance scanning.

Assessing coverage of Amazon ECR repositories

The **Repositories** tab shows Amazon ECR repositories in your AWS environment. The lists are organized into groups on the following tabs:

- **All** – Shows all the repositories in your environment. The **Status** column indicates the current scanning status for a repository.
- **Activated** – Shows all the repositories that Amazon Inspector is configured to monitor and scan in your environment. The **Status** column indicates the current scanning status for a repository.
- **Not activated** – Shows all the repositories that Amazon Inspector is not monitoring and scanning in your environment. The **Reason** column indicates why Amazon Inspector is not monitoring and scanning a repository.

On each tab, the **Account** column specifies the AWS account that owns a repository.

To review additional details about a repository, choose the repository's name. Amazon Inspector then displays a list of container images in the repository and details for each image. The details

include the image tag, image digest, and scanning status. They also include key finding statistics, such as the number of **Critical** findings for the image. To drill down and review supporting data for finding statistics, choose the image tag for the image.

Scanning status values for Amazon ECR repositories

For an Amazon Elastic Container Registry (Amazon ECR) repository, the possible **Status** values are:

- **Activated (Continuous)** – For a repository, Amazon Inspector is continuously monitoring images in this repository. The enhanced scanning setting for the repository is set to continuous scanning. Amazon Inspector initially scans new images when they are pushed and rescans images if a new CVE relevant to that image is published. Amazon Inspector will continue to be monitor images in this repository for the Amazon ECR re-scan duration you configure.
- **Activated (On push)** – Amazon Inspector automatically scans individual container images in the repository when a new image is pushed. Enhanced scanning is activated for the repository and set to scan on push.
- **Access denied** – Amazon Inspector isn't allowed to access the repository or any container images in the repository.

  To remediate this issue, ensure that AWS Identity and Access Management (IAM) policies for the repository allow Amazon Inspector to access the repository.
- **Deactivated (Manual)** – Amazon Inspector isn't monitoring or scanning any container images in the repository. The Amazon ECR scanning setting for the repository is set to basic, manual scanning.

  To start scanning images in the repository with Amazon Inspector, change the scanning setting for the repository to enhanced scanning, and then choose whether to scan images continuously or only when a new image is pushed.
- **Activated (On push)** – Amazon Inspector automatically scans individual container images in the repository when a new image is pushed. The enhanced scanning setting for the repository is set to scan on push.
- **Internal error** – An internal error occurred when Amazon Inspector attempted to scan the repository. Amazon Inspector will automatically address the error and resume scanning as soon as possible.

For details about configuring the scanning settings for repositories Amazon ECR container image scanning.

Assessing coverage of Amazon ECR container images

The **Images** tab shows Amazon ECR container images in your AWS environment. The lists are organized into groups on the following tabs:

- **All** – Shows all the container images in your environment. The **Status** column indicates the current scanning status for an image.
- **Scanning** – Shows all the container images that Amazon Inspector is configured to monitor and scan in your environment. The **Status** column indicates the current scanning status for an image.
- **Not scanning** – Shows all the container images that Amazon Inspector is not monitoring and scanning in your environment. The **Reason** column indicates why Amazon Inspector is not monitoring and scanning an image.

  A container image can appear on the **Not activated** tab for any of several reasons. The image might be stored in a repository that Amazon Inspector scans are not activated for, or Amazon ECR filtering rules prevent that repository from being scanned. Or the image has not been pushed or pulled within the number of days your configured for the **ECR re-scan duration**. For more information, see Configuring the Amazon ECR re-scan duration.

On each tab, the **Repository name** column specifies the name of the repository that stores a container image. The **Account** column specifies the AWS account that owns the repository. The **Last scanned** column shows you when Amazon Inspector last checked that resource for vulnerabilities. This can include checks when there is an update to finding metadata, when there is an update to the application inventory of the resource, or when a rescan is done in response to a new CVE. For more information, see Scan behaviors for Amazon ECR scanning.

To review additional details about a container image, choose the link in the **ECR container image** column. Amazon Inspector then displays details about the image and current findings for the image. To review the details of a finding, choose the link in the **Title** column. For information about these details, see Viewing details for your Amazon Inspector findings.

Scanning status values for Amazon ECR container images

For an Amazon Elastic Container Registry container image, the possible **Status** values are:

- **Actively monitoring (Continuous)** – Amazon Inspector is continuously monitoring and the image and new scans are performed on it whenever a new relevant CVE is published. The Amazon ECR

rescan duration for the image is refreshed whenever the image is pushed or pulled. Enhanced scanning is enabled for the repository that stores the image, and the enhanced scanning setting for the repository is set to continuous scanning.

- **Activated (On push)** – Amazon Inspector automatically scans the image each time a new image is pushed. Enhanced scanning is activated for the repository that stores the image, and the enhanced scanning setting for the repository is set to scan on push.
- **Internal error** – An internal error occurred when Amazon Inspector attempted to scan the container image. Amazon Inspector will automatically address the error and resume scanning as soon as possible.
- **Pending initial scan** – Amazon Inspector has queued the image for an initial scan.
- **Scan eligibility expired (Continuous)** – Amazon Inspector suspended scanning for the image. The image hasn't been updated within the duration that you specified for automated re-scans of images in the repository. You can push or pull the image to resume scanning.
- **Scan eligibility expired (On push)** – Amazon Inspector suspended scanning for the image. The image hasn't been updated within the duration that you specified for automated re-scans of images in the repository. You can push the image to resume scanning.
- **Scan frequency manual (Manual)** – Amazon Inspector doesn't scan the Amazon ECR container image. The Amazon ECR scanning setting for the repository that stores image is set to basic, manual scanning. To start scanning the image automatically with Amazon Inspector, change the repository setting to enhanced scanning, and then choose whether to scan images continuously or only when a new image is pushed.
- **Unsupported OS** – Amazon Inspector isn't monitoring or scanning the image. The image is based on an operating system that Amazon Inspector doesn't support, or it uses a media type that Amazon Inspector doesn't support.

  For a list of operating systems that Amazon Inspector supports, see Supported operating systems: Amazon ECR scanning with Amazon Inspector. For a list of media types that Amazon Inspector supports, see Supported media types.

For details about configuring the scanning settings for repositories and images, see Amazon ECR container image scanning.

Assessing coverage of AWS Lambda functions

The **Lambda** tab shows Lambda functions in your AWS environment. This page two tables, one that shows function coverage details for Lambda standard scanning and another for Lambda code scanning. You can group functions based on the following tabs:

- **All** – Shows all the Lambda functions in your environment. The **Status** column indicates the current scanning status for a Lambda function.
- **Scanning** – Shows the Lambda functions that Amazon Inspector is configured to scan. The **Status** column indicates the current scanning status for each Lambda function.
- **Not scanning** – Shows the Lambda functions that Amazon Inspector is not configured to scan. The **Reason** column indicates why Amazon Inspector is not monitoring and scanning a function.

  A Lambda function can appear on the **Not scanning** tab for several reasons. The Lambda function might belong to an account that hasn't been added to Amazon Inspector or filtering rules prevent this function from being scanned. For more information, see Lambda function scanning.

On each tab, the **Function name** column specifies the name of the Lambda function. The **Account** column specifies the AWS account that owns the function. **Runtime** specifies the function's runtime. The **Status** column indicates the current scanning status for each Lambda function. **Resource tags** shows the tags that have been applied to the function. The **Last scanned** column shows you when Amazon Inspector last checked that resource for vulnerabilities. This can include checks when there is an update to finding metadata, when there is an update to the application inventory of the resource, or when a rescan is done in response to a new CVE. For more information, see Scan behaviors for Lambda function scanning.

Scanning status values for AWS Lambda functions

For a Lambda function, the possible **Status** values are:

- **Actively monitoring** – Amazon Inspector is continuously monitoring and scanning Lambda functions. Continuous scanning includes an initial scan of new functions when they are pushed to the repository and automated re-scans of functions when they are updated or when new Common Vulnerabilities and Exposures (CVEs) are released.
- **Excluded by tag**– Amazon Inspector isn’t scanning this function because it has been excluded from scans by tags.

- **Scan eligibility expired**– Amazon Inspector is not monitoring this function because it has been 90 days or more since it was last invoked or updated.
- **Internal error**–An internal error occurred when Amazon Inspector attempted to scan the function. Amazon Inspector will automatically address the error and resume scanning as soon as possible.
- **Pending initial scan**– Amazon Inspector has queued the function for an initial scan.
- **Unsupported**– The Lambda function has an unsupported runtime.

Managing multiple accounts in Amazon Inspector with AWS Organizations

You can use Amazon Inspector to manage multiple accounts in an organization. To do this, you must activate Amazon Inspector with the AWS Organizations management account and specify a delegated administrator. The delegated administrator manages Amazon Inspector for an organization and can perform tasks on behalf of the organization. The following topics describe the difference between a delegated administrator account and member account, how to designate and remove a delegated administrator, and how to manage member accounts.

Topics

Understanding the delegated administrator account and member account in Amazon Inspector

When using Amazon Inspector in a multi-account environment, the delegated administrator account has access to specific metadata. The metadata includes standard scanning for Amazon EC2, Amazon ECR, and Lambda, and Lambda code scanning. It also includes security finding results for member accounts. This section provides information about which actions the delegated adminstrator account can make and member accounts can make.

Delegated administrator actions

Generally, when the delegated administrator applies settings to their account, those settings are applied to all of the other accounts in the organization. The delegated administrator can also view and retrieve information for their own account and any associated member. An Amazon Inspector delegated administrator account can perform the following actions:

- Only the AWS Organizations management account can designate and remove a delegated administrator.
- When designating a delegated administrator, you must be in the same organization as the member accounts you want to manage.

- View and manage the status of Amazon Inspector for associated accounts, including activating and deactivating Amazon Inspector.
- Activate or deactivate scanning types for all member accounts in the organization.
- View aggregated finding data across the organization and finding details for all member accounts within the organization.
- Create and manage suppression rules that apply to findings for all accounts in the organization.
- Activate Amazon ECR enhanced scanning for all members of the organization.
- View resource coverage for the entire organization.
- Define the duration for automated re-scans of ECR container images for all member accounts in the organization. The delegated administrator's scan duration setting overrides any setting that the member account previously set. All accounts in the organization share the Amazon ECR automated re-scan duration of the delegated administrators. You can't set different re-scan durations for individual accounts.
- Specify five custom paths for Amazon Inspector deep inspection for Amazon EC2 that will be used across all accounts in the organization. This is in addition to the five custom paths that a delegated administrator can set for their individual account. For more information about configuring deep inspection custom paths, see Custom paths for Amazon Inspector deep inspection.
- Activate and deactivate Amazon Inspector deep inspection for member accounts.
- Export SBOMs for any member accounts in the organization.
- Set the Amazon EC2 scan mode for all member accounts in the organization. For more information, see Managing scan mode.
- Create and manage CIS scan configurations for all accounts in the organization, except for any scan configurations created by member accounts.

> **Note**
>
> If a member account leaves the organization, the delegated administrator will no longer be able to see scan configurations scheduled by that account.

- View CIS scan results for all accounts in the organization.

Member account actions

A member account can view and retrieve information about their account in Amazon Inspector, while settings for their account are managed by the delegated administrator. Member accounts within an organization can perform the following actions in Amazon Inspector:

- Activate Amazon Inspector for their own account.
- View resource coverage for their own account.
- View findings details for their own account.
- View the ECR container image automated re-scan duration setting for their own account.
- Specify five custom paths for Amazon Inspector deep inspection for EC2 that will be used for their individual account. These paths are scanned in addition to any custom paths that the delegated administrator has specified for the organization. For more information about configuring deep inspection paths, see Custom paths for Amazon Inspector deep inspection.
- View the custom paths set by your delegated administrator for Amazon Inspector deep inspection.
- Export SBOMs for any resources associated with their account.
- View the scan mode for their account.
- Create and manage CIS scan configurations for their account.
- View the results of any CIS scans for resources in their account, including those scheduled by the delegated administrator.

> **Note**
>
> After activation, Amazon Inspector can be deactivated only by a delegated administrator account.

Designating a delegated administrator account for Amazon Inspector

The delegated administrator is an account that manages a service for an organiztion. This topic describes how to designate a delegated administrator for Amazon Inspector.

Considerations

Before designating a delegated administrator, note the following:

The delegated administrator can manage a maximum of 10,000 members.

If you exceed 10,000 member accounts, you receive a notification through the Amazon CloudWatch Personal Health Dashboard and email to the delegated administrator account.

The delegated administrator is Regional.

Amazon Inspector is a Regional service. You must repeat the steps in the procedure in every AWS Region where you plan to use Amazon Inspector.

An organization can have only one delegated administrator.

If designate an account as the delegated administrator in one AWS Region, that account must be the delegated administrator in all other AWS Regions.

Changing a delegated administrator does not deactivate Amazon Inspector for member accounts.

If you remove a delegated administrator, member accounts become standalone accounts and scan settings aren't affected.

Your AWS Organization must have all features activated.

This is the default setting for AWS Organizations. If it's not activated, see Activating all features in your organization.

Permissions required to designate a delegated administrator

You must have permission to activate Amazon Inspector and to designate an Amazon Inspector delegated administrator. Add the following statement to the end of your IAM policy to grant these permissions. For more information, see Managing IAM policies.

```
{
    "Sid": "PermissionsForInspectorAdmin",
    "Effect": "Allow",
    "Action": [
        "inspector2:EnableDelegatedAdminAccount",
        "organizations:EnableAWSServiceAccess",
```

```
        "organizations:RegisterDelegatedAdministrator",
        "organizations:ListDelegatedAdministrators",
        "organizations:ListAWSServiceAccessForOrganization",
        "organizations:DescribeOrganizationalUnit",
        "organizations:DescribeAccount",
        "organizations:DescribeOrganization"
    ],
    "Resource": "*"
}
```

Designating a delegated administrator for your AWS organization

The following procedure describes how to designate a delegated administrator for your organization. Before you complete the procedure, make sure you are in the same organization as the member accounts you want the delegated administrator to manage.

> **Note**
>
> You must use the AWS Organizations management account to complete this procedure. Only the AWS Organizations management account can designate a delegated administrator. Permissions might be required to designate a delegated administrator. For more information, see Permissions required to designate a delegated administrator.

When you activate Amazon Inspector for the first time, Amazon Inspector creates the service linked role `AWSServiceRoleForAmazonInspector` for the account. For information about how Amazon Inspector uses service-linked roles, see Using service-linked roles for Amazon Inspector.

Console

To designate a delegated administrator for Amazon Inspector

1. Sign in to the AWS Organizations management account, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. Use the AWS Region selector to specify the AWS Region where you want to designate the delegated administrator.
3. From the navigation pane, choose **General settings**.
4. Under **Delegated administrator**, enter the 12-digit ID of the AWS account you want to designate as the delegated administrator.

5. Choose **Delegate**, and then choose **Delegate** again.

When you designate a delegated administrator, all scan types are activated for the account by default. If you want to activate Amazon Inspector for the AWS Organizations management account, complete the following procedure.

To activate Amazon Inspector for the AWS Organizations management account

1. Sign in to the delegated administrator account, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. From the navigation pane, choose **Account management**.
3. Under **Accounts**, select the AWS Organizations management account, and then choose **Activate**.
4. Select which scan types you want to activate for the AWS Organizations management account, and then choose **Submit**.

API

Designate a delegated administrator using the API

- Run the EnableDelegatedAdminAccount API operation using the credentials of the AWS account of the Organizations management account. You can also use the AWS Command Line Interface to do this by running the following CLI command:`aws inspector2 enable-delegated-admin-account --delegated-admin-account-id 11111111111`.

> **Note**
>
> Make sure to specify the account ID of the account that you want to make an Amazon Inspector delegated administrator.

Activating Amazon Inspector scans for member accounts

If you're the delegated adminstrator for an organization, you can activate Amazon EC2 and Amazon ECR scanning for member accounts in the organization. Once you activate scanning for a member account, Amazon Inspector is automatically activated for that account, and the account

becomes associated with the delegated administrator account. For information about Amazon Inspector scanning types, see Automated scan types in Amazon Inspector. This section describes how to activate scanning for member accounts.

Activate scanning for member accounts

You can activate scanning for member accounts in different ways. The following procedures describe how to activate scanning for all member accounts and specific member accounts as the delegated administrator, as well as how to activate scanning as a member account.

To automatically activate scanning for all member accounts

1. Sign in using the delegated administrator account credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. Use the region selector to choose the AWS Region where you want to activate scanning for all member accounts.
3. From the navigation pane, choose **Account management**. The **Accounts** tab displays all member accounts associated with the AWS Organizations management account.
4. Under **Organization**, select the box next to **Account number**. Then choose **Activate** to select which scanning options you want to apply to member accounts. You can select the following scanning types:

   - Amazon EC2 scanning
   - Amazon ECR scanning
   - Lambda standard scanning
   - Lambda code scanning

   - After you select your preferred scanning types, choose **Save**.

   > **Note**
   >
   > If you have multiple pages of accounts, you must repeat this step on each page. You can choose the gear icon to change the number of accounts displayed on each page.

5. Turn on the **Automatically activate Inspector for new member accounts** setting, and select which scanning options you want to apply to new member accounts added to your organization. You can select the following scanning types:

- Amazon EC2 scanning
- Amazon ECR scanning
- Lambda standard scanning
- Lambda code scanning

- After you select your preferred scanning types, choose **Activate**.

> **Note**
>
> The **Automatically activate Inspector for new member accounts** setting activates Amazon Inspector for all future members of your organization.
> If the number of member accounts is more than 5,000, this setting is automatically turned off. If the total number of member accounts decreases to less than 5,000, the setting is automatically reactivated.

6. (Recommended) Repeat each of these steps in each AWS Region where you want to activate scanning for member accounts.

To activate scanning for specific member accounts

1. Sign in using the delegated administrator account credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. Use the region selector to choose the AWS Region where you want to activate scanning for all member accounts.
3. From the navigation pane, choose **Account management**. The **Accounts** tab displays all member accounts associated with the AWS Organizations management account.
4. Under **Organization**, select the box next to each member account number you want to activate scanning for. Then choose **Activate** to select which scanning options you want to apply to member accounts. You can select the following scanning types:

   - Amazon EC2 scanning
   - Amazon ECR scanning
   - Lambda standard scanning
   - Lambda code scanning

- After you select your preferred scanning types, choose **Save**.

> **Note**
>
> If you have multiple pages of accounts, you must repeat this step on each page. You can choose the gear icon to change the number of accounts displayed on each page.

5. (Recommended) Repeat each of these steps in each AWS Region where you want to activate scanning for specific members.

To activate scanning as a member account

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. Use the region selector to choose the AWS Region where you want to activate scanning for all member accounts.
3. From the navigation pane, choose **Account management**. The **Accounts** tab displays all member accounts associated with the AWS Organizations management account.
4. Under **Organization**, select the box next to your account number. Then choose **Activate** to select which scanning options you want to apply. You can select the following scanning types:

   - Amazon EC2 scanning
   - Amazon ECR scanning
   - Lambda standard scanning
   - Lambda code scanning

   - After you select your preferred scanning types, choose **Save**.
5. (Recommended) Repeat these steps in each Region where you want to activate scanning for your member account.

> **Note**
>
> If your AWS Organizations management account has a delegated administrator account for Amazon Inspector, you can activate your account as a member account to view scan details.

Disassociating member accounts in Amazon Inspector

As the delegated administrator, you might need to disassociate a member account from your account. When you disassociate a member account, Amazon Inspector is still activated in the account, and the account becomes a standalone account. You also don't have permission to manage Amazon Inspector for the account anymore. However, you can associate previously disassociated member accounts with your account at any time. This section describes how to disassociate member accounts as the delegated administrator.

Console

To disassociate member accounts using the console

1. Sign in using the delegated administrator account credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home
2. Use the region selector to choose the AWS Region where you want to disassociate member accounts.
3. From the navigation pane, choose **Account management**.
4. Under **Organization**, select the box next to each account number you want to disassociate.
5. Choose **Actions** menu, and then choose **Disassociate account**.

API

To disassociate member accounts using the API

Run the DisassociateMember API operation. In the request, provide the account IDs you're disassociating.

Removing the delegated administrator in Amazon Inspector

You might need to remove the Amazon Inspector delegated administrator account. You can do this from the AWS Organizations management account. When you remove the Amazon Inspector delegated administrator account, Amazon Inspector is still activated in the account and in all of its member accounts. The delegated administrator account and all of its member accounts become standalone accounts and retain their original scan settings. This section describes how to remove the delegated administrator account.

Remove the Amazon Inspector delegated administrator

The following procedures describe how to remove the Amazon Inspector delegated administrator and how to associate member accounts from the delegated administrator account.

For information about how to assign an Amazon Inspector delegated admninistrator, see Designating a delegated administrator account for Amazon Inspector.

> **Note**
>
> After you assign an Amazon Inspector delegated administrator, the Amazon Inspector delegated administrator must associate member accounts manually.

To remove the delegated administrator

1. Sign in to the AWS Management Console using the AWS Organizations management account.
2. Open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
3. Use the region selector to choose the AWS Region where you want to remove the delegated administrator.
4. From the navigation pane, choose **General settings**.
5. Under **Delegated administrator**, choose **Remove**, and then confirm your action.

To associate members with a new delegated administrator

1. Sign in using the delegated administrator account credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. Use the region selector to choose the AWS Region where you want to associate members.

3. From the navigation pane, choose **Account management**.
4. Under **Organization**, select the box next to **Account number**.
5. Choose **Actions**, and then choose **Add member**.

Tagging Amazon Inspector resources

A tag is a label you add to an AWS resource. Tags help you categorize AWS resources based on specific criteria. Tags consist of a key-value pair. The tag key is a general label. The tag value is a description of the tag key. With Amazon Inspector, you can tag suppression rules and CIS scan configurations. You can add as many as 50 tags to each of your Amazon Inspector resources.

Tagging fundamentals

A tag consists of a key-value pair. The tag key is a general label. The tag value is a description of the tag key. This topic descibes the fundamentals of tagging Amazon Inspector resources. When tagging Amazon Inspector resources, consider the following:

- You can tag suppression rules and CIS scan configurations.
- You can add as many as 50 tags to each of your Amazon Inspector resources.
- Tag keys must be unique.
- A tag key can only have one tag value.
- Tag keys and tag values can have a maximum of 128 UTF-8 characters. The characters can be letters, numbers, spaces, or the following symbols: `_ . : / = + - @`.
- You cannot use the `aws` prefix in any of your tags or modify tags with this prefix. Tags with the `aws` prefix are reserved for use by AWS.
- Tags assigned to an Amazon Inspector resource are only available in your AWS account and in the AWS Region where you created them.
- When you delete a resource, all tags associated with it are deleted, too.

For more information about tags, see Best practices and strategies in the *Tagging AWS Resources and Tag Editor User Guide*.

> **Note**
>
> Tags are not intended to store confidential or sensitive information. Never use tags to store this type of data. Tags can be accessible from other AWS services.

Adding tags

You can add tags to Amazon Inspector resources. These resources include suppression rules and CIS scan configurations. Tags help you categorize AWS resources based on specific criteria. This topic describes how to add tags to Amazon Inspector resources.

Adding tags to Amazon Inspector resources

You can tag suppression rules and CIS scan configurations. The following procedures describe how to add tags in the console and with the Amazon Inspector API.

Adding tags in the console

You can add tags to Amazon Inspector resources in the console.

Adding tags to suppression rules

You can add tags to suppression rules during creation. For more information, see Creating a suppression rule.

You can also edit a suppression rule to include tags. For more information, see Editing a suppression rule.

Adding tags to a CIS scan configuration

You can add tags to a CIS scan configuration during creation. For more information, see Creating a CIS scan configuration.

You can also edit a CIS scan configuration to include tags. For more information, see Editing a CIS scan configuration.

Adding tags with the Amazon Inspector API

You can add tags to Amazon Inspector resources with the Amazon Inspector API.

Adding tags to Amazon Inspector resources

Use the `TagResource` API to add tags to Amazon Inspector resources. You must include the ARN of the resource and the key-value pair for the tag in the command. The following example command uses an empty resource ARN for a suppression filter. The key is `CostAllocation` and value is `dev`. For information about resource types for Amazon Inspector, see Actions, resources, and condition keys for Amazon Inspector2 in the *Service Authorization Reference*.

```
aws inspector2 tag-resource \
--resource-arn "arn:${Partition}:inspector2:${Region}:${Account}:owner/${OwnerId}/
filter/${FilterId}" \
--tags CostAllocation=dev \
--region us-west-2
```

Adding tags to suppression rules during creation

Use the `CreateFilter` API to add tags to a suppression rule during creation.

```
aws inspector2 create-filter \
--name "ExampleSuppressionRuleECR" \
--action SUPPRESS \
--filter-criteria 'resourceType=[{comparison="EQUALS", value="AWS_ECR_IMAGE"}]' \
--tags Owner=ApplicationSecurity \
--region us-west-2
```

Adding tags to a CIS scan configuration

Use the `CreateCisScanConfiguration` API to add a tag to a CIS scan configuration.

```
aws inspector2 create-cis-scan-configuration \
--scan-name "CreateConfigWithTagsSample" \
--security-level LEVEL_2 \
--targets accountIds=SELF,targetResourceTags={InspectorCisScan=True} \
--schedule 'daily={startTime={timeOfDay=11:10,timezone=UTC}}' \
--tags Owner=SecurityEngineering \
--region us-west-2
```

Removing tags

You can remove tags from Amazon Inspector resources. These resources include suppression rules and CIS scan configurations. Tags help you categorize AWS resources based on specific criteria. This topic describes how to remove tags from Amazon Inspector resources.

Removing tags from Amazon Inspector resources

You can remove tags from suppression rules and CIS scan configurations. The following procedures describe how to remove tags in the console and with the Amazon Inspector API.

Removing tags in the console

You can remove tags from Amazon Inspector resources in the console.

Removing tags from suppression rules

You can remove a tag from a suppression rule by editing the suppression rule to no longer include the tag. For more information, see Editing a suppression rule.

Removing tags from a CIS scan configuration

You can remove a tag from a CIS scan configuration by editing the CIS scan configuration to no longer include the tag. For more information, see Editing a CIS scan configuration.

Removing tags with the Amazon Inspector API

You can remove a tag from an Amazon Inspector resource with the Amazon Inspector API.

Removing tags from Amazon Inspector resources

Use the `UntagResource` API to remove tags from Amazon Inspector resources.

The following snippet shows an example of how to remove tag from an Amazon Inspector resource using `UntagResource`. You must include the ARN of the resource and key for tag in the command. The following example uses an empty resource ARN for a suppression filter. The key is `CostAllocation`. For information about resource types for Amazon Inspector, see Actions, resources, and condition keys for Amazon Inspector2 in the *Service Authorization Reference*.

```
aws inspector2 untag-resource \
--resource-arn "arn:${Partition}:inspector2:${Region}:${Account}:owner/${OwnerId}/cis-configuration/${CISScanConfigurationId}" \
--tag-keys CostAllocation \
--region us-west-2
```

Monitoring Usage and Cost in Amazon Inspector

You can use the Amazon Inspector console and API to project monthly Amazon Inspector costs for your environment. If you're the Amazon Inspector administrator for a multiple-account environment, you can view the total cost for your environment and cost metrics for all member accounts. This section describes how to access usage statistics and calculate usage costs.

Using the usage console

You can assess usage and projected cost for Amazon Inspector from the console.

To access usage statistics

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. By using the AWS Region selector in the upper-right corner of the page, select the Region you want to monitor costs in.
3. In the navigation pane, choose **Usage**.

In the **By account** tab you will see the projected total cost based on the 30 day period listed under **Account usage**. In the table under the **Projected cost** column select a value to see a breakdown of usage by scan type for that account. In this detail pane you can also see which scan types have a free trial active for that account.

If you are the delegated administrator for an organization you will see a row in the table for each account within your organization. If an account in your organization is disassociated the console shows it's projected cost as a **-**.

In the **By scan type** tab you can see a break down of actual usage so far in the current 30 day period by scan type. This is the information used to calculate the projected costs in the **By account** tab.

If you are the delegated administrator for an organization you can see the usage for each account in your organization.

In this tab, you can expand any of the following panes for usage statistics:

Amazon EC2 scanning

The Amazon Inspector usage console tracks the following metrics for agent-based scanning and agentless scanning:

- **Instances (Avg)** — Amazon Inspector uses the coverage hours to calculate the average number of resources for EC2 instance scanning. The average is the total coverage hours divided by 720 hours (the number of hours in a 30 day period).
- **Coverage hours** — for Amazon EC2 scanning this is the sum total number of hours within the last 30 days that Amazon Amazon Inspector provided active coverage for each EC2 instance in an account. For EC2 instances, coverage hours are the hours from when Amazon Inspector discovered the instance until it's terminated or stopped, or excluded from scans by tags. (when you restart a stopped instance or remove an exclusion tag, Amazon Inspector resumes coverage and coverage hours for that instance will continue to accrue).

CIS instance Scans — The total number of CIS scans performed for instances in the account.

Amazon ECR scanning

Initial scans — The sum total of first time scans of images in the account within the last 30 days.

Rescans — The sum total of rescans for images in the account within the last 30 days. A rescan is any scan done on an ECR image that Amazon Inspector has previously scanned. If you have configured your ECR repository for continuous scanning, rescans occur automatically when Amazon Inspector adds a new Common Vulnerabilities and Exposures (CVE) to it's database.

Lambda scanning

The Amazon Inspector usage console tracks the following metrics for Lambda standard scanning and Lambda code scanning:

- **Number of Lambda functions (Avg)** — Amazon Inspector uses the coverage hours to calculate the average number of functions for Lambda function scanning. Average is the total coverage hours divided by 720 hours (the number of hours in a 30 day period).
- **Coverage hours** — For Lambda function scanning this is the sum total number of hours within the last 30 days that Amazon Amazon Inspector provided active coverage for each Lambda function in an account. For AWS Lambda functions the coverage hours are calculated from when Amazon Inspector discovers a function until when it's deleted or excluded from scans. If an excluded function is included again, coverage hours for that function will continue to accrue.

Understanding how Amazon Inspector calculates usage costs

The costs provided by Amazon Inspector are estimates, not actual costs, so they may differ from those in your AWS Billing console.

Note the following about how Amazon Inspector calculates cost on the **Usage** page:

- The usage cost reflects the current region only. Prices per scan type vary by AWS Region, to review exact prices per region, see the Pricing for Amazon Inspector
- All usage projections are rounded to the nearest US dollar.
- Discounts aren't included in the projected costs.
- The projected cost represent the total cost for the 30 day usage period per scan type. If there has been less than 30 days of usage for an account, Amazon Inspector projects the cost after 30 days as if any currently covered resources will remain covered for the rest of the 30 day period.
- The cost per scan type is calculated based on the following:
  - EC2 scanning: cost reflects the average number of EC2 instances covered by Amazon Inspector in the last 30 days.
  - ECR container scanning: cost reflects the sum of the number of initial image scans + image rescans in the last 30 days.
  - Lambda standard scanning: cost reflects the average number of Lambda functions covered by Amazon Inspector in the last 30 days.
  - Lambda code scanning: cost reflects the average number of Lambda functions covered by Amazon Inspector in the last 30 days.

About the Amazon Inspector free trial

In Amazon Inspector, each scan type has a free trail. When you activate a scan type, you automatically enroll in a 15-day free trial for that scan type. Once the free trial starts, it automatically expires in 15 days, even if you deactivate the scan type.

> **Note**
>
> The free trial does not apply to CIS scanning.

Security in Amazon Inspector

Cloud security at AWS is the highest priority. As an AWS customer, you benefit from data centers and network architectures that are 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 Inspector, 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 Inspector. The following topics show you how to configure Amazon Inspector 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 Inspector resources.

Topics

Data protection in Amazon Inspector

The AWS shared responsibility model applies to data protection in Amazon Inspector. 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. 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 (IAM). 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*.
- 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 confidential or sensitive 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 Inspector 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.

Topics

- Encryption in transit

Encryption at rest

By default, Amazon Inspector stores data at rest using AWS encryption solutions. Amazon Inspector encrypts data, such as the following:

- Resource inventory collected with AWS Systems Manager.
- Resource inventory parsed from Amazon Elastic Container Registry images
- Generated security findings using AWS owned encryption keys from AWS Key Management Service

You cannot manage, use, or view AWS owned keys. However, you don't need to take action or change programs to protect keys that encrypt your data. For more information, see AWS owned keys.

If you disable Amazon Inspector, it permanently deletes all resources it stores or maintains for you, such as collected inventory and security findings.

Encryption at rest for code in your findings

For Amazon Inspector Lambda code scanning, Amazon Inspector partners with CodeGuru to scan your code for vulnerabilities. When a vulnerability is detected CodeGuru extracts a snippet of your code containing the vulnerability and stores that code until Amazon Inspector requests access. By default CodeGuru uses an AWS owned key to encrypt the extracted code, however, you can configure Amazon Inspector to use your own customer managed AWS KMS key for encryption.

The following work flow explains how Amazon Inspector uses the key you configure to encrypt your code:

1. You supply a AWS KMS key to Amazon Inspector using the Amazon Inspector UpdateEncryptionKey API.
2. Amazon Inspector forwards the information about your AWS KMS key to CodeGuru. CodeGuru stores the information for future use.
3. CodeGuru requests a grant from AWS KMS for the key you configured in Amazon Inspector.
4. CodeGuru creates an encrypted data key from your AWS KMS key and stores it. This data key is used to encrypt your code data stored by CodeGuru.

5. Whenever Amazon Inspector requests data from code scans CodeGuru uses the grant to decrypt the encrypted data key, then uses that key to decrypt the data so it can be retrieved.

When you disable Lambda code scanning CodeGuru retires the grant and deletes the associated data key.

Permissions for code encryption with a customer managed key

To use encryption you need to have a policy that allows access to AWS KMS actions, as well as a statement that grants Amazon Inspector and CodeGuru permissions to use those actions through condition keys.

If you are setting, updating, or resetting the encryption key for your account you will need to use an Amazon Inspector administrator policy, such as AWS managed policy: AmazonInspector2FullAccess. You will also need to grant the following permissions to read-only users who need to retrieve code snippets from findings or data about the key chosen for encryption.

For KMS, the policy must allow you to perform the following actions:

- `kms:CreateGrant`
- `kms:Decrypt`
- `kms:DescribeKey`
- `kms:GenerateDataKeyWithoutPlainText`
- `kms:Encrypt`
- `kms:RetireGrant`

Once you've verified that you have the correct AWS KMS permissions in your policy, you must attach a statement that allows Amazon Inspector and CodeGuru to use your key for encryption. Attach the following policy statement:

> **Note**
>
> Replace Region with the AWS Region you have Amazon Inspector Lambda code scanning enabled in.

```
{
            "Sid": "allow CodeGuru Security to request a grant for a AWS KMS key",
          "Effect": "Allow",
          "Action": "kms:CreateGrant",
          "Resource": "*",
          "Condition": {
           "ForAllValues:StringEquals": {
            "kms:GrantOperations": [
             "GenerateDataKey",
             "GenerateDataKeyWithoutPlaintext",
             "Encrypt",
             "Decrypt",
             "RetireGrant",
             "DescribeKey"
            ]
           },
           "StringEquals": {
            "kms:ViaService": [
             "codeguru-security.Region.amazonaws.com"
            ]
           }
          }
         },
         {
          "Sid": "allow Amazon Inspector and CodeGuru Security to use your AWS KMS key",
          "Effect": "Allow",
          "Action": [
           "kms:Encrypt",
           "kms:Decrypt",
           "kms:RetireGrant",
           "kms:DescribeKey",
           "kms:GenerateDataKeyWithoutPlaintext"
          ],
          "Resource": "*",
          "Condition": {
           "StringEquals": {
            "kms:ViaService": [
             "inspector2.Region.amazonaws.com",
             "codeguru-security.Region.amazonaws.com"
            ]
           }
          }
```

```
        }
```

> **Note**
>
> When you add the statement, ensure that the syntax is valid. Policies use JSON format. This means that you need to add a comma before or after the statement, depending on where you add the statement to the policy. If you add the statement as the last statement, add a comma after the closing brace for the preceding statement. If you add it as the first statement or between two existing statements, add a comma after the closing brace for the statement.

Configuring encryption with a customer managed key

To configure encryption for your account using a customer managed key you must be an Amazon Inspector administrator with the permissions outlined in Permissions for code encryption with a customer managed key. Additionally you will need a AWS KMS key in the same AWS Region as your findings, or a multi-region key. You can use an existing symmetric key in your account or create a symmetric customer managed key by using the AWS Management Console, or the AWS KMS APIs. For more information see Creating symmetric encryption AWS KMS keys in the AWS KMS user guide.

> **Note**
>
> Effective June 13th, 2025, the service principal in AWS KMS requests logged in CloudTrail during code snippet encryption/decryption is changing from "codeguru-reviewer" to "q".

Using the Amazon Inspector API to configure encryption

To set a key for encryption the UpdateEncryptionKey operation of the Amazon Inspector API while signed in as an Amazon Inspector administrator. In the API request, use the `kmsKeyId` field to specify the ARN of the AWS KMS key you want to use. For `scanType` enter `CODE` and for `resourceType` enter `AWS_LAMBDA_FUNCTION`.

You can use UpdateEncryptionKey API to check view which AWS KMS key Amazon Inspector is using for encryption.

> **Note**
>
> If you attempt to use `GetEncryptionKey` when you haven't set a customer managed key the operation returns a `ResourceNotFoundException` error which means that an AWS owned key is being used for encryption.

If you delete or the key or change it's policy to deny access to Amazon Inspector or CodeGuru you will be unable to access your code vulnerability findings and Lambda code scanning will fail for your account.

You can use `ResetEncryptionKey` to resume using an AWS owned key to encrypt code extracted as part of your Amazon Inspector findings.

Encryption in transit

AWS encrypts all data in transit between AWS internal systems and other AWS services. AWS Systems Manager gathers telemetry data from customer-owned EC2 instances it sends to AWS over a Transport Layer Security (TLS)-protected channel for assessment. Amazon ECR and AWS Lambda function scan findings that are sent to Security Hub are encrypted using a TLS-protected channel. For more information, see Data Protection in Systems Manager to understand how SSM encrypts data in transit.

Identity and Access Management for Amazon Inspector

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 Inspector resources. IAM is an AWS service that you can use with no additional charge.

Topics

- Audience
- Authenticating with identities
- Managing access using policies
- How Amazon Inspector works with IAM

- Identity-based policy examples for Amazon Inspector
- AWS managed policies for Amazon Inspector
- Using service-linked roles for Amazon Inspector
- Troubleshooting Amazon Inspector identity and access

Audience

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

Service user – If you use the Amazon Inspector service to do your job, then your administrator provides you with the credentials and permissions that you need. As you use more Amazon Inspector 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 Inspector, see Troubleshooting Amazon Inspector identity and access.

Service administrator – If you're in charge of Amazon Inspector resources at your company, you probably have full access to Amazon Inspector. It's your job to determine which Amazon Inspector 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 Inspector, see How Amazon Inspector 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 Inspector. To view example Amazon Inspector identity-based policies that you can use in IAM, see Identity-based policy examples for Amazon Inspector.

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, as 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 by 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 AWS Signature Version 4 for API requests in the *IAM User Guide*.

Regardless of the authentication method that you use, you might 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 User Guide* and AWS Multi-factor authentication in IAM in the *IAM User Guide*.

AWS account root user

When you create an AWS account, you begin with one 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 the 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 *IAM User 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 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 Use cases for IAM users 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. To temporarily assume an IAM role in the AWS Management Console, you can switch from a user to an IAM role (console). 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 Methods to assume a role 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 Create a role for a third-party identity provider

(federation) 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 User Guide*.

- **Temporary IAM user permissions** – An IAM user or role 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 Cross account resource access in IAM 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.
  - **Forward access sessions (FAS)** – 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 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 Create 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 EC2 instance and making AWS CLI or AWS API requests. This is preferable to storing access keys within the EC2 instance. To assign an AWS role to an 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 EC2 instance to get temporary credentials. For more information, see Use an IAM role to grant permissions to applications running on Amazon EC2 instances 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**.

By default, users and roles have no permissions. To grant users permission to perform actions on the resources that they need, an IAM administrator can create IAM policies. The administrator can then add the IAM policies to roles, and users can assume the roles.

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, 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*.

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 Choose 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. 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.

Resource-based policies are inline policies that are located in that service. You can't use AWS managed policies from IAM in a resource-based policy.

Access control lists (ACLs)

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.

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 an 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 Service control policies in the *AWS Organizations User Guide*.

- **Resource control policies (RCPs)** – RCPs are JSON policies that you can use to set the maximum available permissions for resources in your accounts without updating the IAM policies attached to each resource that you own. The RCP limits permissions for resources in member accounts and can impact the effective permissions for identities, including the AWS account root user, regardless of whether they belong to your organization. For more information about Organizations and RCPs, including a list of AWS services that support RCPs, see Resource control policies (RCPs) 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 Inspector works with IAM

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

IAM features you can use with Amazon Inspector

IAM feature	Amazon Inspector support
Identity-based policies	Yes
Resource-based policies	No
Policy actions	Yes
Policy resources	Yes

IAM feature	Amazon Inspector support
Policy condition keys (service-specific)	Yes
ACLs	No
ABAC (tags in policies)	Partial
Temporary credentials	Yes
Principal permissions	Yes
Service roles	No
Service-linked roles	Yes

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

Identity-based policies for Amazon Inspector

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 can use in a JSON policy, see IAM JSON policy elements reference in the *IAM User Guide*.

Identity-based policy examples for Amazon Inspector

To view examples of Amazon Inspector identity-based policies, see Identity-based policy examples for Amazon Inspector.

Resource-based policies within Amazon Inspector

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 Inspector

Supports policy 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 a JSON policy describes the actions that you can use to allow or deny access in a policy. Policy actions usually have the same name as the associated AWS API operation. There are some exceptions, such as *permission-only actions* that don't have a matching API operation. There are also some operations that require multiple actions in a policy. These additional actions are called *dependent actions*.

Include actions in a policy to grant permissions to perform the associated operation.

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

Policy actions in Amazon Inspector use the following prefix before the action:

```
inspector2
```

To specify multiple actions in a single statement, separate them with commas.

```
"Action": [
      "inspector2:action1",
      "inspector2:action2"
         ]
```

To view examples of Amazon Inspector identity-based policies, see Identity-based policy examples for Amazon Inspector.

Policy resources for Amazon Inspector

Supports policy resources: 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 `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 Inspector resource types and their ARNs, see Resources defined by Amazon Inspector in the *Service Authorization Reference*. To learn with which actions you can specify the ARN of each resource, see Actions defined by Amazon Inspector.

To view examples of Amazon Inspector identity-based policies, see Identity-based policy examples for Amazon Inspector.

Policy condition keys for Amazon Inspector

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*.

AWS supports global condition keys and service-specific condition keys. To see all AWS global condition keys, see AWS global condition context keys in the *IAM User Guide*.

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

To view examples of Amazon Inspector identity-based policies, see Identity-based policy examples for Amazon Inspector.

ACLs in Amazon Inspector

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.

ABAC with Amazon Inspector

Supports ABAC (tags in policies): Partial

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.

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.

If a service supports all three condition keys for every resource type, then the value is **Yes** for the service. If a service supports all three condition keys for only some resource types, then the value is **Partial**.

For more information about ABAC, see Define permissions with ABAC authorization in the *IAM User Guide*. To view a tutorial with steps for setting up ABAC, see Use attribute-based access control (ABAC) in the *IAM User Guide*.

Using temporary credentials with Amazon Inspector

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.

Cross-service principal permissions for Amazon Inspector

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 Inspector

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*.

> **Warning**
>
> Changing the permissions for a service role might break Amazon Inspector functionality. Edit service roles only when Amazon Inspector provides guidance to do so.

Service-linked roles for Amazon Inspector

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 service-linked roles, see AWS services that work with IAM. Find a service in the table that includes a Yes in the **Service-linked role** column. Choose the **Yes** link to view the service-linked role documentation for that service.

Identity-based policy examples for Amazon Inspector

By default, users and roles don't have permission to create or modify Amazon Inspector resources. They also can't perform tasks by using the AWS Management Console, AWS Command Line Interface (AWS CLI), or AWS API. To grant users permission to perform actions on the resources that they need, an IAM administrator can create IAM policies. The administrator can then add the IAM policies to roles, and users can assume the roles.

To learn how to create an IAM identity-based policy by using these example JSON policy documents, see Create IAM policies (console) in the *IAM User Guide*.

For details about actions and resource types defined by Amazon Inspector, including the format of the ARNs for each of the resource types, see Actions, resources, and condition keys for Amazon Inspector in the *Service Authorization Reference*.

Topics

Policy best practices

Identity-based policies determine whether someone can create, access, or delete Amazon Inspector 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 Validate policies with IAM Access Analyzer in the *IAM User Guide*.
- **Require multi-factor authentication (MFA)** – If you have a scenario that requires IAM users or a root user in your AWS 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 Secure API access with MFA in the *IAM User Guide*.

For more information about best practices in IAM, see Security best practices in IAM in the *IAM User Guide*.

Using the Amazon Inspector console

To access the Amazon Inspector console, you must have a minimum set of permissions. These permissions must allow you to list and view details about the Amazon Inspector 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 entities (users or roles) with that policy.

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 they're trying to perform.

To ensure that users and roles can still use the Amazon Inspector console, also attach the Amazon Inspector `ConsoleAccess` or `ReadOnly` AWS managed policy to the entities. For more information, see Adding permissions to a user in the *IAM User Guide*.

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",
    "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": "*"
        }
    ]
}
```

Allow read-only access to all Amazon Inspector resources

This example shows a policy that allows read-only access to all Amazon Inspector resources.

JSON

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": [
                "inspector2:Describe*",
                "inspector2:Get*",
                "inspector2:BatchGet*",
                "inspector2:List*"
            ],
            "Resource": "*"
        },
        {
            "Effect": "Allow",
            "Action": [
                "organizations:ListDelegatedAdministrators",
                "organizations:ListAWSServiceAccessForOrganization",
                "organizations:DescribeOrganizationalUnit",
                "organizations:DescribeAccount",
                "organizations:DescribeOrganization"
            ],
            "Resource": "*"
        }
    ]
}
```

Allow full access to all Amazon Inspector resources

This example shows a policy that allows full access to all Amazon Inspector resources.

JSON

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": "inspector2:*",
```

```
            "Resource": "*"
        },
        {
            "Effect": "Allow",
            "Action": "iam:CreateServiceLinkedRole",
            "Resource": "*",
            "Condition": {
                "StringLike": {
                    "iam:AWSServiceName": "inspector2.amazonaws.com"
                }
            }
        },
        {
            "Effect": "Allow",
            "Action": [
                "organizations:EnableAWSServiceAccess",
                "organizations:RegisterDelegatedAdministrator",
                "organizations:ListDelegatedAdministrators",
                "organizations:ListAWSServiceAccessForOrganization",
                "organizations:DescribeOrganizationalUnit",
                "organizations:DescribeAccount",
                "organizations:DescribeOrganization"
            ],
            "Resource": "*"
        }
    ]
}
```

AWS managed policies for Amazon Inspector

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: AmazonInspector2FullAccess_v2

You can attach the `AmazonInspector2FullAccess` policy to your IAM identities.

This policy grants full access to Amazon Inspector and access to other related services.

Permissions details

This policy includes the following permissions.

- `inspector2` – Allows complete access to Amazon Inspector APIs.
- `codeguru-security` – Allows administrators to retrieve security findings and configuration settings for an account.
- `iam` – Allows Amazon Inspector to create the service-linked roles `AWSServiceRoleForAmazonInspector2` and `AWSServiceRoleForAmazonInspector2Agentless`. `AWSServiceRoleForAmazonInspector2` is required for Amazon Inspector to perform operations like retrieving information about Amazon EC2 instances, Amazon ECR repositories, and Amazon ECR container images. It's also required to decrypt Amazon EBS snapshots encrypted with AWS KMS keys. For more information, see Using service-linked roles for Amazon Inspector.
- `organizations` – `AllowServicePrincipalBasedAccessToOrganizationApis` allows only service principals to create service-linked roles for AWS accounts, register an AWS account as a delegated administrator for an organization, and list delegated administrators in an organization. `AllowOrganizationalBasedAccessToOrganizationApis` allows the policy holder to retrieve information, specifically resource-level ARNs, about an organizational unit. `AllowAccountsBasedAccessToOrganizationApis` allows the policy holder to retrieve information, specifically resource-level ARNs, about an AWS account.

`AllowAccessToOrganizationApis` allows the policy holder to view AWS services integrated with an organization and organization information.

```
{
  "Version" : "2012-10-17",
  "Statement" : [
    {
      "Sid" : "AllowFullAccessToInspectorApis",
      "Effect" : "Allow",
      "Action" : "inspector2:*",
      "Resource" : "*"
    },
    {
      "Sid" : "AllowAccessToCodeGuruApis",
      "Effect" : "Allow",
      "Action" : [
        "codeguru-security:BatchGetFindings",
        "codeguru-security:GetAccountConfiguration"
      ],
      "Resource" : "*"
    },
    {
      "Sid" : "AllowAccessToCreateSlr",
      "Effect" : "Allow",
      "Action" : "iam:CreateServiceLinkedRole",
      "Resource" : "*",
      "Condition" : {
        "StringEquals" : {
          "iam:AWSServiceName" : [
            "agentless.inspector2.amazonaws.com",
            "inspector2.amazonaws.com"
          ]
        }
      }
    },
    {
      "Sid" : "AllowServicePrincipalBasedAccessToOrganizationApis",
      "Effect" : "Allow",
      "Action" : [
        "organizations:EnableAWSServiceAccess",
        "organizations:RegisterDelegatedAdministrator",
        "organizations:ListDelegatedAdministrators"
```

```
      ],
      "Resource" : "*",
      "Condition": {
        "StringEquals": {
          "organizations:ServicePrincipal": [
            "inspector2.amazonaws.com",
            "agentless.inspector2.amazonaws.com"
          ]
        }
      }
    },
    {
      "Sid" : "AllowOrganizationalBasedAccessToOrganizationApis",
      "Effect" : "Allow",
      "Action" : [
        "organizations:DescribeOrganizationalUnit"
      ],
      "Resource" : "arn:*:organizations::*:ou/o-*/ou-*"
    },
    {
      "Sid" : "AllowAccountsBasedAccessToOrganizationApis",
      "Effect" : "Allow",
      "Action" : [
        "organizations:DescribeAccount"
      ],
      "Resource" : "arn:*:organizations::*:account/o-*/*"
    },
    {
      "Sid" : "AllowAccessToOrganizationApis",
      "Effect" : "Allow",
      "Action" : [
        "organizations:ListAWSServiceAccessForOrganization",
        "organizations:DescribeOrganization"
      ],
      "Resource" : "*"
    }
  ]
}
```

AWS managed policy: AmazonInspector2FullAccess

You can attach the `AmazonInspector2FullAccess` policy to your IAM identities.

This policy grants administrative permissions that allow full access to Amazon Inspector.

Permissions details

This policy includes the following permissions.

- `inspector2` – Allows full access to Amazon Inspector functionality.
- `iam` – Allows Amazon Inspector to create the service-linked roles `AWSServiceRoleForAmazonInspector2` and `AWSServiceRoleForAmazonInspector2Agentless`. `AWSServiceRoleForAmazonInspector2` is required for Amazon Inspector to perform operations such as retrieve information about your Amazon EC2 instances, Amazon ECR repositories, and container images. It's also required for Amazon Inspector to analyze your VPC network and describe accounts that are associated with your organization. `AWSServiceRoleForAmazonInspector2Agentless` is required for Amazon Inspector to perform operations, such as retrieve information about your Amazon EC2 instances and Amazon EBS snapshots. It's also required to decrypt Amazon EBS snapshots that are encrypted with AWS KMS keys. For more information, see Using service-linked roles for Amazon Inspector.
- `organizations` – Allows administrators to use Amazon Inspector for an organization in AWS Organizations. When you activate trusted access for Amazon Inspector in AWS Organizations, members of the delegated administrator account can manage settings and view findings across their organization.
- `codeguru-security` – Allows administrators to use Amazon Inspector to retrieve information code snippets and change encryption settings for code that CodeGuru Security stores. For more information, see Encryption at rest for code in your findings.

JSON

```
{
 "Version": "2012-10-17",
 "Statement": [
  {
   "Sid": "AllowFullAccessToInspectorApis",
   "Effect": "Allow",
   "Action": "inspector2:*",
```

```
    "Resource": "*"
   },
   {
    "Sid": "AllowAccessToCodeGuruApis",
    "Effect": "Allow",
    "Action": [
     "codeguru-security:BatchGetFindings",
     "codeguru-security:GetAccountConfiguration"
    ],
    "Resource": "*"
   },
   {
    "Sid": "AllowAccessToCreateSlr",
    "Effect": "Allow",
    "Action": "iam:CreateServiceLinkedRole",
    "Resource": "*",
    "Condition": {
     "StringEquals": {
      "iam:AWSServiceName": [
       "agentless.inspector2.amazonaws.com",
       "inspector2.amazonaws.com"
      ]
     }
    }
   },
   {
    "Sid": "AllowAccessToOrganizationApis",
    "Effect": "Allow",
    "Action": [
     "organizations:EnableAWSServiceAccess",
     "organizations:RegisterDelegatedAdministrator",
     "organizations:ListDelegatedAdministrators",
     "organizations:ListAWSServiceAccessForOrganization",
     "organizations:DescribeOrganizationalUnit",
     "organizations:DescribeAccount",
     "organizations:DescribeOrganization"
    ],
    "Resource": "*"
   }
  ]
}
```

AWS managed policy: AmazonInspector2ReadOnlyAccess

You can attach the `AmazonInspector2ReadOnlyAccess` policy to your IAM identities.

This policy grants permissions that allow read-only access to Amazon Inspector.

Permissions details

This policy includes the following permissions.

- `inspector2` – Allows read-only access to Amazon Inspector functionality.
- `organizations` – Allows details about Amazon Inspector coverage for an organization in AWS Organizations to be viewed.
- `codeguru-security` – Allows code snippets to be retrieved from CodeGuru Security. Also allows encryption settings for your code stored in CodeGuru Security to be viewed.

JSON

```
{
 "Version": "2012-10-17",
 "Statement": [
  {
   "Effect": "Allow",
   "Action": [
    "organizations:ListDelegatedAdministrators",
    "organizations:ListAWSServiceAccessForOrganization",
    "organizations:DescribeOrganizationalUnit",
    "organizations:DescribeAccount",
    "organizations:DescribeOrganization",
    "inspector2:BatchGet*",
    "inspector2:List*",
    "inspector2:Describe*",
    "inspector2:Get*",
    "inspector2:Search*",
    "codeguru-security:BatchGetFindings",
    "codeguru-security:GetAccountConfiguration"
   ],
   "Resource": "*"
```

```
  }
 ]
}
```

AWS managed policy: AmazonInspector2ManagedCisPolicy

You can attach the `AmazonInspector2ManagedCisPolicy` policy to your IAM entities. This policy should be attached to a role that grants permissions to your Amazon EC2 instances to run CIS scans of the instance. You can use an IAM role to manage temporary credentials for applications that are running on an EC2 instance and making AWS CLI or AWS API requests. This is preferable to storing access keys within the EC2 instance. To assign an AWS role to an 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 EC2 instance to get temporary credentials. For more information, see Use an IAM role to grant permissions to applications running on Amazon EC2 instances in the *IAM User Guide*.

Permissions details

This policy includes the following permissions.

- `inspector2` – Allows access to actions used to run CIS scans.

JSON

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": [
                "inspector2:StartCisSession",
                "inspector2:StopCisSession",
                "inspector2:SendCisSessionTelemetry",
                "inspector2:SendCisSessionHealth"
            ],
            "Resource": "*"
        }
    ]
}
```

AWS managed policy: AmazonInspector2ServiceRolePolicy

You can't attach the `AmazonInspector2ServiceRolePolicy` policy to your IAM entities. This policy is attached to a service-linked role that allows Amazon Inspector to perform actions on your behalf. For more information, see Using service-linked roles for Amazon Inspector.

AWS managed policy: AmazonInspector2AgentlessServiceRolePolicy

You can't attach the `AmazonInspector2AgentlessServiceRolePolicy` policy to your IAM entities. This policy is attached to a service-linked role that allows Amazon Inspector to perform actions on your behalf. For more information, see Using service-linked roles for Amazon Inspector.

Amazon Inspector updates to AWS managed policies

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

Change	Description	Date
AmazonInspector2FullAccess_v2 – New policy	Amazon Inspector has added a new managed policy that provides full access to Amazon Inspector and access to other related services.	July 03, 2025
AmazonInspector2ServiceRolePolicy – Updates to an existing policy	Amazon Inspector has added a new permission that allows Amazon Inspector to describe IP addresses and internet gateways.	April 29, 2025
AmazonInspector2ServiceRolePolicy – Updates to an existing policy	Amazon Inspector has added new permissions that allow read-only access to Amazon ECS and Amazon EKS actions.	March 25, 2025

Change	Description	Date
AmazonInspector2ServiceRolePolicy – Updates to an existing policy	Amazon Inspector has added new permissions that allow Amazon Inspector to return function tags in AWS Lambda.	July 31, 2024
AmazonInspector2FullAccess – Updates to an existing policy	Amazon Inspector has added permissions that allow Amazon Inspector to create the service-linked role `AWSServiceRoleForAmazonInspector2Agentless` This allows users to perform agent-based scanning and agentless scanning when they enable Amazon Inspector.	April 24, 2024
AmazonInspector2ManagedCisPolicy – New policy	Amazon Inspector has added a new managed policy that you can use as part of an instance profile to allow CIS scans on an instance.	January 23, 2024
AmazonInspector2ServiceRolePolicy – Updates to an existing policy	Amazon Inspector has added new permissions that allow Amazon Inspector to start CIS scans on target instances.	January 23, 2024
AmazonInspector2AgentlessServiceRolePolicy – New policy	Amazon Inspector has added a new service-linked role policy to allow agentless scanning of EC2 instance.	November 27, 2023

Change	Description	Date
AmazonInspector2ReadOnlyAccess – Updates to an existing policy	Amazon Inspector has added new permissions that allow read-only users to retrieve vulnerability intelligence details for package vulnerability findings.	September 22, 2023
AmazonInspector2ServiceRolePolicy – Updates to an existing policy	Amazon Inspector has added new permissions that allow Amazon Inspector to scan network configurations of Amazon EC2 instances that are part of Elastic Load Balancing target groups.	August 31, 2023
AmazonInspector2ReadOnlyAccess – Updates to an existing policy	Amazon Inspector has added new permissions that allow read-only users to export Software Bill of Materials (SBOM) for their resources.	June 29, 2023
AmazonInspector2ReadOnlyAccess – Updates to an existing policy	Amazon Inspector has added new permissions that allow read-only users to retrieve details of encryption settings for Lambda code scanning findings for their account.	June 13, 2023
AmazonInspector2FullAccess – Updates to an existing policy	Amazon Inspector has added new permissions that allow users configure a customer managed KMS key to encrypt code in findings from Lambda code scanning.	June 13, 2023

Change	Description	Date
AmazonInspector2ReadOnlyAccess – Updates to an existing policy	Amazon Inspector has added new permissions that allow read-only users to retrieve details of Lambda code scanning status and findings for their account.	May 02, 2023
AmazonInspector2ServiceRolePolicy – Updates to an existing policy	Amazon Inspector has added new permissions that allow Amazon Inspector to create AWS CloudTrail service-linked channels in your account when you activate Lambda scanning. This allows Amazon Inspector to monitor CloudTrail events in your account.	April 30, 2023
AmazonInspector2FullAccess – Updates to an existing policy	Amazon Inspector has added new permissions that allow users to retrieve details of code vulnerability findings from Lambda code scanning.	April 21, 2023
AmazonInspector2ServiceRolePolicy – Updates to an existing policy	Amazon Inspector has added new permissions that allow Amazon Inspector to send information to Amazon EC2 Systems Manager about the custom paths a customer has defined for Amazon EC2 deep inspection.	April 17, 2023

Change	Description	Date
AmazonInspector2ServiceRolePolicy – Updates to an existing policy	Amazon Inspector has added new permissions that allow Amazon Inspector to create AWS CloudTrail service-linked channels in your account when you activate Lambda scanning. This allows Amazon Inspector to monitor CloudTrail events in your account.	April 30, 2023
AmazonInspector2ServiceRolePolicy – Updates to an existing policy	Amazon Inspector has added new permissions that allow Amazon Inspector to request scans of the developer code in AWS Lambda functions , and receive scan data from Amazon CodeGuru Security. Additionally, Amazon Inspector has added permissions to review IAM policies. Amazon Inspector uses this information to scan Lambda functions for code vulnerabilities.	February 28, 2023

Change	Description	Date
AmazonInspector2ServiceRolePolicy – Updates to an existing policy	Amazon Inspector has added a new statement that allows Amazon Inspector to retrieve information from CloudWatch about when an AWS Lambda function was last invoked. Amazon Inspector uses this information to focus scans on the Lambda functions in your environment that have been active in the last 90 days.	February 20, 2023
AmazonInspector2ServiceRolePolicy – Updates to an existing policy	Amazon Inspector has added a new statement that allows Amazon Inspector to retrieve information about AWS Lambda functions, including each layer version that is associated with each function. Amazon Inspector uses this information to scan Lambda functions for security vulnerabilities.	November 28, 2022

Change	Description	Date
AmazonInspector2ServiceRolePolicy – Updates to an existing policy	Amazon Inspector has added a new action to allow Amazon Inspector to describe SSM association executions. Additionally, Amazon Inspector has added additional resource scoping to allow Amazon Inspector to create, update, delete, and start SSM associations with `AmazonInspector2` owned SSM documents.	August 31, 2022
AmazonInspector2ServiceRolePolicy Updates to an existing policy	Amazon Inspector has updated the resource scoping of the policy to allow Amazon Inspector to collect software inventory in other AWS partitions.	August 12, 2022
AmazonInspector2ServiceRolePolicy – Updates to an existing policy	Amazon Inspector has restructured the resource scoping of the actions allowing Amazon Inspector to create, delete, and update SSM associations.	August 10, 2022
AmazonInspector2ReadOnlyAccess – New policy	Amazon Inspector added a new policy to allow read-only access to Amazon Inspector functionality.	January 21, 2022

Change	Description	Date
AmazonInspector2FullAccess – New policy	Amazon Inspector added a new policy to allow full access to Amazon Inspector functionality.	November 29, 2021
AmazonInspector2ServiceRolePolicy – New policy	Amazon Inspector added a new policy to allow Amazon Inspector to perform actions in other services on your behalf.	November 29, 2021
Amazon Inspector started tracking changes	Amazon Inspector started tracking changes for its AWS managed policies.	November 29, 2021

Using service-linked roles for Amazon Inspector

Amazon Inspector uses an AWS Identity and Access Management (IAM) service-linked role named `AWSServiceRoleForAmazonInspector2`. This service-linked role is an IAM role that is linked directly to Amazon Inspector. It is predefined by Amazon Inspector and it includes all the permissions that Amazon Inspector requires to call other AWS services on your behalf.

A service-linked role makes setting up Amazon Inspector easier because you don't have to manually add the necessary permissions. Amazon Inspector defines the permissions of its service-linked role and, unless defined otherwise, only Amazon Inspector can assume the role. The defined permissions include the trust policy and the permissions policy, and that permissions policy cannot be attached to any other IAM entity.

You must configure permissions to allow an IAM entity (such as a 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*. You can delete a service-linked role only after deleting its related resources. This protects your Amazon Inspector 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 roles** column. Choose a **Yes** with a link to review the service-linked role documentation for that service.

Service-linked role permissions for Amazon Inspector

Amazon Inspector uses the managed policy named `AWSServiceRoleForAmazonInspector2`. This service-linked role trusts the `inspector2.amazonaws.com` service to assume the role.

The permissions policy for the role, which is named `AmazonInspector2ServiceRolePolicy`, allows Amazon Inspector to perform tasks such as:

- Use Amazon Elastic Compute Cloud (Amazon EC2) actions to retrieve information about your instances and network paths.
- Use AWS Systems Manager actions to retrieve inventory from your Amazon EC2 instances, and to retrieve information about third-party packages from custom paths.
- Use the AWS Systems Manager `SendCommand` action to invoke CIS scans for target instances.
- Use Amazon Elastic Container Registry actions to retrieve information about your container images.
- Use AWS Lambda actions to retrieve information about your Lambda functions.
- Use AWS Organizations actions to describe associated accounts.
- Use CloudWatch actions to retrieve information about the last time your Lambda functions were invoked.
- Use select IAM actions to retrieve information about your IAM policies that could create security vulnerabilities in your Lambda code.
- Use CodeGuru Security actions to perform scans of the code in your Lambda functions. Amazon Inspector uses the following CodeGuru Security actions:
  - codeguru-security:CreateScan – Grants permission to create CodeGuru Security scan.
  - codeguru-security:GetScan – Grants permission to retrieve CodeGuru Security scan metadata.
  - codeguru-security:ListFindings – Grants permission to retrieve findings generated by CodeGuru Security.
  - codeguru-security:DeleteScansByCategory – Grants permission for CodeGuru Security to delete scans initiated by Amazon Inspector.
  - codeguru-security:BatchGetFindings – Grants permission to retrieve a batch of specific findings generated by CodeGuru Security.

- Use select Elastic Load Balancing actions to preform network scans of EC2 instances that are part of Elastic Load Balancing target groups.
- Use Amazon ECS and Amazon EKS actions to allow read-only access to view clusters and tasks and describe tasks.

The role is configured with the following permissions policy.

JSON

```
    {
"Version": "2012-10-17",
"Statement": [
 {
  "Sid": "TirosPolicy",
  "Effect": "Allow",
  "Action": [
   "directconnect:DescribeConnections",
   "directconnect:DescribeDirectConnectGatewayAssociations",
   "directconnect:DescribeDirectConnectGatewayAttachments",
   "directconnect:DescribeDirectConnectGateways",
   "directconnect:DescribeVirtualGateways",
   "directconnect:DescribeVirtualInterfaces",
   "ec2:DescribeAddresses",
   "ec2:DescribeAvailabilityZones",
   "ec2:DescribeCustomerGateways",
   "ec2:DescribeEgressOnlyInternetGateways",
   "ec2:DescribeInstances",
   "ec2:DescribeInternetGateways",
   "ec2:DescribeManagedPrefixLists",
   "ec2:DescribeNatGateways",
   "ec2:DescribeNetworkAcls",
   "ec2:DescribeNetworkInterfaces",
   "ec2:DescribePrefixLists",
   "ec2:DescribeRegions",
   "ec2:DescribeRouteTables",
   "ec2:DescribeSecurityGroups",
   "ec2:DescribeSubnets",
   "ec2:DescribeTransitGatewayAttachments",
   "ec2:DescribeTransitGatewayConnects",
   "ec2:DescribeTransitGatewayPeeringAttachments",
```

```
    "ec2:DescribeTransitGatewayRouteTables",
    "ec2:DescribeTransitGatewayVpcAttachments",
    "ec2:DescribeTransitGateways",
    "ec2:DescribeVpcEndpointServiceConfigurations",
    "ec2:DescribeVpcEndpoints",
    "ec2:DescribeVpcPeeringConnections",
    "ec2:DescribeVpcs",
    "ec2:DescribeVpnConnections",
    "ec2:DescribeVpnGateways",
    "ec2:GetManagedPrefixListEntries",
    "ec2:GetTransitGatewayRouteTablePropagations",
    "ec2:SearchTransitGatewayRoutes",
    "elasticloadbalancing:DescribeListeners",
    "elasticloadbalancing:DescribeLoadBalancerAttributes",
    "elasticloadbalancing:DescribeLoadBalancers",
    "elasticloadbalancing:DescribeRules",
    "elasticloadbalancing:DescribeTags",
    "elasticloadbalancing:DescribeTargetGroups",
    "elasticloadbalancing:DescribeTargetGroupAttributes",
    "elasticloadbalancing:DescribeTargetHealth",
    "network-firewall:DescribeFirewall",
    "network-firewall:DescribeFirewallPolicy",
    "network-firewall:DescribeResourcePolicy",
    "network-firewall:DescribeRuleGroup",
    "network-firewall:ListFirewallPolicies",
    "network-firewall:ListFirewalls",
    "network-firewall:ListRuleGroups",
    "tiros:CreateQuery",
    "tiros:GetQueryAnswer"
   ],
   "Resource": [
    "*"
   ]
  },
  {
   "Sid": "PackageVulnerabilityScanning",
   "Effect": "Allow",
   "Action": [
    "ecr:BatchGetImage",
    "ecr:BatchGetRepositoryScanningConfiguration",
    "ecr:DescribeImages",
    "ecr:DescribeRegistry",
    "ecr:DescribeRepositories",
    "ecr:GetAuthorizationToken",
```

```
    "ecr:GetDownloadUrlForLayer",
    "ecr:GetRegistryScanningConfiguration",
    "ecr:ListImages",
    "ecr:PutRegistryScanningConfiguration",
    "organizations:DescribeAccount",
    "organizations:DescribeOrganization",
    "organizations:ListAccounts",
    "ssm:DescribeAssociation",
    "ssm:DescribeAssociationExecutions",
    "ssm:DescribeInstanceInformation",
    "ssm:ListAssociations",
    "ssm:ListResourceDataSync"
   ],
   "Resource": "*"
  },
  {
   "Sid": "LambdaPackageVulnerabilityScanning",
   "Effect": "Allow",
   "Action": [
    "lambda:ListFunctions",
    "lambda:GetFunction",
    "lambda:GetLayerVersion",
    "lambda:ListTags",
    "cloudwatch:GetMetricData"
   ],
   "Resource": "*"
  },
  {
   "Sid": "GatherInventory",
   "Effect": "Allow",
   "Action": [
    "ssm:CreateAssociation",
    "ssm:StartAssociationsOnce",
    "ssm:UpdateAssociation"
   ],
   "Resource": [
    "arn:aws:ec2:*:*:instance/*",
    "arn:aws:ssm:*:*:document/AmazonInspector2-*",
    "arn:aws:ssm:*:*:document/AWS-GatherSoftwareInventory",
    "arn:aws:ssm:*:*:managed-instance/*",
    "arn:aws:ssm:*:*:association/*"
   ]
  },
  {
```

```
    "Sid": "GatherInventoryDeleteAssociation",
    "Effect": "Allow",
    "Action": [
     "ssm:DeleteAssociation"
    ],
    "Resource": [
     "arn:aws:ssm:*:*:association/*"
    ]
   },
   {
    "Sid": "DataSyncCleanup",
    "Effect": "Allow",
    "Action": [
     "ssm:CreateResourceDataSync",
     "ssm:DeleteResourceDataSync"
    ],
    "Resource": [
     "arn:aws:ssm:*:*:resource-data-sync/InspectorResourceDataSync-do-not-delete"
    ]
   },
   {
    "Sid": "ManagedRules",
    "Effect": "Allow",
    "Action": [
     "events:PutRule",
     "events:DeleteRule",
     "events:DescribeRule",
     "events:ListTargetsByRule",
     "events:PutTargets",
     "events:RemoveTargets"
    ],
    "Resource": [
     "arn:aws:events:*:*:rule/DO-NOT-DELETE-AmazonInspector*ManagedRule"
    ]
   },
   {
    "Sid": "LambdaCodeVulnerabilityScanning",
    "Effect": "Allow",
    "Action": [
     "codeguru-security:CreateScan",
     "codeguru-security:GetAccountConfiguration",
     "codeguru-security:GetFindings",
     "codeguru-security:GetScan",
     "codeguru-security:ListFindings",
```

```
    "codeguru-security:BatchGetFindings",
    "codeguru-security:DeleteScansByCategory"
   ],
   "Resource": [
    "*"
   ]
  },
  {
   "Sid": "CodeGuruCodeVulnerabilityScanning",
   "Effect": "Allow",
   "Action": [
    "iam:GetRole",
    "iam:GetRolePolicy",
    "iam:GetPolicy",
    "iam:GetPolicyVersion",
    "iam:ListAttachedRolePolicies",
    "iam:ListPolicies",
    "iam:ListPolicyVersions",
    "iam:ListRolePolicies",
    "lambda:ListVersionsByFunction"
   ],
   "Resource": [
    "*"
   ],
   "Condition": {
    "ForAnyValue:StringEquals": {
     "aws:CalledVia": [
      "codeguru-security.amazonaws.com"
     ]
    }
   }
  },
  {
   "Sid": "Ec2DeepInspection",
   "Effect": "Allow",
   "Action": [
    "ssm:PutParameter",
    "ssm:GetParameters",
    "ssm:DeleteParameter"
   ],
   "Resource": [
    "arn:aws:ssm:*:*:parameter/inspector-aws/service/inspector-linux-application-
paths"
   ],
```

```
    "Condition": {
     "StringEquals": {
      "aws:ResourceAccount": "${aws:PrincipalAccount}"
     }
    }
   },
   {
    "Sid": "AllowManagementOfServiceLinkedChannel",
    "Effect": "Allow",
    "Action": [
     "cloudtrail:CreateServiceLinkedChannel",
     "cloudtrail:DeleteServiceLinkedChannel"
    ],
    "Resource": [
     "arn:aws:cloudtrail:*:*:channel/aws-service-channel/inspector2/*"
    ],
    "Condition": {
     "StringEquals": {
      "aws:ResourceAccount": "${aws:PrincipalAccount}"
     }
    }
   },
   {
    "Sid": "AllowListServiceLinkedChannels",
    "Effect": "Allow",
    "Action": [
     "cloudtrail:ListServiceLinkedChannels"
    ],
    "Resource": [
     "*"
    ],
    "Condition": {
     "StringEquals": {
      "aws:ResourceAccount": "${aws:PrincipalAccount}"
     }
    }
   },
   {
    "Sid": "AllowToRunInvokeCisSpecificDocuments",
    "Effect": "Allow",
    "Action": [
     "ssm:SendCommand",
     "ssm:GetCommandInvocation"
    ],
```

```
  "Resource": [
   "arn:aws:ssm:*:*:document/AmazonInspector2-InvokeInspectorSsmPluginCIS"
  ]
 },
 {
  "Sid": "AllowToRunCisCommandsToSpecificResources",
  "Effect": "Allow",
  "Action": [
   "ssm:SendCommand"
  ],
  "Resource": [
   "arn:aws:ec2:*:*:instance/*"
  ],
  "Condition": {
   "StringEquals": {
    "aws:ResourceAccount": "${aws:PrincipalAccount}"
   }
  }
 },
 {
  "Sid": "AllowToPutCloudwatchMetricData",
  "Effect": "Allow",
  "Action": [
   "cloudwatch:PutMetricData"
  ],
  "Resource": [
   "*"
  ],
  "Condition": {
   "StringEquals": {
    "cloudwatch:namespace": "AWS/Inspector2"
   }
  }
 },
 {
  "Sid": "AllowListAccessToECSAndEKS",
  "Effect": "Allow",
  "Action": [
      "ecs:ListClusters",
      "ecs:ListTasks",
      "eks:ListClusters"
  ],
  "Resource": [
      "*"
```

```
    ],
    "Condition": {
        "StringEquals": {
            "aws:ResourceAccount": "${aws:PrincipalAccount}"
        }
    }
    },
    {
    "Sid": "AllowAccessToECSTasks",
    "Effect": "Allow",
    "Action": [
        "ecs:DescribeTasks"
    ],
    "Resource": "arn:aws:ecs:*:*:task/*",
    "Condition": {
        "StringEquals": {
            "aws:ResourceAccount": "${aws:PrincipalAccount}"
     }
    }
   }
  ]
}
```

Creating a service-linked role for Amazon Inspector

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

Editing a service-linked role for Amazon Inspector

Amazon Inspector does not allow you to edit the `AWSServiceRoleForAmazonInspector2` service-linked role. After a service-linked role is created, you cannot change the name of the role because various entities might reference the role. However, you can edit the description of the role by using IAM. For more information, see Editing a service-linked role in the *IAM User Guide*.

Deleting a service-linked role for Amazon Inspector

If you no longer need to use Amazon Inspector, we recommend that you delete the `AWSServiceRoleForAmazonInspector2` service-linked role. Before you can delete the role, you

must deactivate Amazon Inspector in each AWS Region where it's activated. When you deactivate Amazon Inspector, it doesn't delete the role for you. Therefore, if you activate Amazon Inspector again, it can use the existing role. That way you can avoid having an unused entity that's not actively monitored or maintained. However, you must clean up the resources for your service-linked role before you can manually delete it.

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

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

You can use the IAM console, the AWS CLI, or the AWS API to delete the `AWSServiceRoleForAmazonInspector2` service-linked role. For more information, see Deleting a service-linked role in the *IAM User Guide*.

Service-linked role permissions for Amazon Inspector agentless scans

Amazon Inspector agentless scanning uses the service-linked role named `AWSServiceRoleForAmazonInspector2Agentless`. This SLR allows Amazon Inspector to create an Amazon EBS volume snapshot in your account, and then access the data from that snapshot. This service-linked role trusts the `agentless.inspector2.amazonaws.com` service to assume the role.

> **Important**
>
> The statements in this service-linked role prevent Amazon Inspector from performing agentless scans on any EC2 instance that you have excluded from scans using the `InspectorEc2Exclusion` tag. Additionally the statements prevent Amazon Inspector from accessing encrypted data from a volume when the KMS key used to encrypt it has the `InspectorEc2Exclusion` tag. For more information, see Excluding instances from Amazon Inspector scans.

The permissions policy for the role, which is named `AmazonInspector2AgentlessServiceRolePolicy`, allows Amazon Inspector to perform tasks such as:

- Use Amazon Elastic Compute Cloud (Amazon EC2) actions to retrieve information about your EC2 instances, volumes, and snapshots.
  - Use Amazon EC2 tagging actions to tag snapshots for scans with the `InspectorScan` tag key.
  - Use Amazon EC2 snapshot actions to create snapshots, tag them with the `InspectorScan` tag key, and then delete snapshots of Amazon EBS volumes that have been tagged with the `InspectorScan` tag key.
- Use Amazon EBS actions to retrieve information from snapshots tagged with the `InspectorScan` tag key.
- Use select AWS KMS decryption actions to decrypt snapshots encrypted with AWS KMS customer managed keys. Amazon Inspector does not decrypt snapshots when the KMS key used to encrypt them is tagged with the `InspectorEc2Exclusion` tag.

The role is configured with the following permissions policy.

JSON

```
{
 "Version": "2012-10-17",
 "Statement": [
  {
   "Sid": "InstanceIdentification",
   "Effect": "Allow",
   "Action": [
    "ec2:DescribeInstances",
    "ec2:DescribeVolumes",
    "ec2:DescribeSnapshots"
   ],
   "Resource": "*"
  },
  {
   "Sid": "GetSnapshotData",
   "Effect": "Allow",
   "Action": [
    "ebs:ListSnapshotBlocks",
```

```
    "ebs:GetSnapshotBlock"
   ],
   "Resource": "arn:aws:ec2:*:*:snapshot/*",
   "Condition": {
    "StringLike": {
     "aws:ResourceTag/InspectorScan": "*"
    }
   }
  },
  {
   "Sid": "CreateSnapshotsAnyInstanceOrVolume",
   "Effect": "Allow",
   "Action": "ec2:CreateSnapshots",
   "Resource": [
    "arn:aws:ec2:*:*:instance/*",
    "arn:aws:ec2:*:*:volume/*"
   ]
  },
  {
   "Sid": "DenyCreateSnapshotsOnExcludedInstances",
   "Effect": "Deny",
   "Action": "ec2:CreateSnapshots",
   "Resource": "arn:aws:ec2:*:*:instance/*",
   "Condition": {
    "StringEquals": {
     "ec2:ResourceTag/InspectorEc2Exclusion": "true"
    }
   }
  },
  {
   "Sid": "CreateSnapshotsOnAnySnapshotOnlyWithTag",
   "Effect": "Allow",
   "Action": "ec2:CreateSnapshots",
   "Resource": "arn:aws:ec2:*:*:snapshot/*",
   "Condition": {
    "Null": {
     "aws:TagKeys": "false"
    },
    "ForAllValues:StringEquals": {
     "aws:TagKeys": "InspectorScan"
    }
   }
  },
  {
```

```
    "Sid": "CreateOnlyInspectorScanTagOnlyUsingCreateSnapshots",
    "Effect": "Allow",
    "Action": "ec2:CreateTags",
    "Resource": "arn:aws:ec2:*:*:snapshot/*",
    "Condition": {
     "StringLike": {
      "ec2:CreateAction": "CreateSnapshots"
     },
     "Null": {
      "aws:TagKeys": "false"
     },
     "ForAllValues:StringEquals": {
      "aws:TagKeys": "InspectorScan"
     }
    }
   },
   {
    "Sid": "DeleteOnlySnapshotsTaggedForScanning",
    "Effect": "Allow",
    "Action": "ec2:DeleteSnapshot",
    "Resource": "arn:aws:ec2:*:*:snapshot/*",
    "Condition": {
     "StringLike": {
      "ec2:ResourceTag/InspectorScan": "*"
     }
    }
   },
   {
    "Sid": "DenyKmsDecryptForExcludedKeys",
    "Effect": "Deny",
    "Action": "kms:Decrypt",
    "Resource": "arn:aws:kms:*:*:key/*",
    "Condition": {
     "StringEquals": {
      "aws:ResourceTag/InspectorEc2Exclusion": "true"
     }
    }
   },
   {
    "Sid": "DecryptSnapshotBlocksVolContext",
    "Effect": "Allow",
    "Action": "kms:Decrypt",
    "Resource": "arn:aws:kms:*:*:key/*",
    "Condition": {
```

```
    "StringEquals": {
     "aws:ResourceAccount": "${aws:PrincipalAccount}"
    },
    "StringLike": {
     "kms:ViaService": "ec2.*.amazonaws.com",
     "kms:EncryptionContext:aws:ebs:id": "vol-*"
    }
   }
  },
  {
   "Sid": "DecryptSnapshotBlocksSnapContext",
   "Effect": "Allow",
   "Action": "kms:Decrypt",
   "Resource": "arn:aws:kms:*:*:key/*",
   "Condition": {
    "StringEquals": {
     "aws:ResourceAccount": "${aws:PrincipalAccount}"
    },
    "StringLike": {
     "kms:ViaService": "ec2.*.amazonaws.com",
     "kms:EncryptionContext:aws:ebs:id": "snap-*"
    }
   }
  },
  {
   "Sid": "DescribeKeysForEbsOperations",
   "Effect": "Allow",
   "Action": "kms:DescribeKey",
   "Resource": "arn:aws:kms:*:*:key/*",
   "Condition": {
    "StringEquals": {
     "aws:ResourceAccount": "${aws:PrincipalAccount}"
    },
    "StringLike": {
     "kms:ViaService": "ec2.*.amazonaws.com"
    }
   }
  },
  {
   "Sid": "ListKeyResourceTags",
   "Effect": "Allow",
   "Action": "kms:ListResourceTags",
   "Resource": "arn:aws:kms:*:*:key/*"
  }
```

```
  ]
}
```

Creating a service-linked role for agentless scanning

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

Editing a service-linked role for agentless scanning

Amazon Inspector does not allow you to edit the `AWSServiceRoleForAmazonInspector2Agentless` service-linked role. After a service-linked role is created, you cannot change the name of the role because various entities might reference the role. However, you can edit the description of the role by using IAM. For more information, see Editing a service-linked role in the *IAM User Guide*.

Deleting a service-linked role for agentless scanning

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 isn't actively monitored or maintained.

> **Important**
>
> In order to delete the `AWSServiceRoleForAmazonInspector2Agentless` role, you must set your scan mode to agent-based in all Regions where agentless scanning is available.

To manually delete the service-linked role using IAM

Use the IAM console, the AWS CLI, or the AWS API to delete the AWSServiceRoleForAmazonInspector2Agentless service-linked role. For more information, see Deleting a service-linked role in the *IAM User Guide*.

Troubleshooting Amazon Inspector identity and access

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

Topics

I am not authorized to perform an action in Amazon Inspector

If you receive an error that you're not authorized to perform an action, your policies must be updated to allow you to perform the action.

The following example error occurs when the `mateojackson` IAM user tries to use the console to view details about a fictional *`my-example-widget`* resource but doesn't have the fictional `inspector2:`*`GetWidget`* permissions.

```
User: arn:aws:iam::123456789012:user/mateojackson is not authorized to perform:
 inspector2:GetWidget on resource: my-example-widget
```

In this case, the policy for the `mateojackson` user must be updated to allow access to the *`my-example-widget`* resource by using the `inspector2:`*`GetWidget`* action.

If you need help, contact your AWS administrator. Your administrator is the person who provided you with your sign-in credentials.

I am not authorized to perform iam:PassRole

If you receive an error that you're not authorized to perform the `iam:PassRole` action, your policies must be updated to allow you to pass a role to Amazon Inspector.

Some AWS services allow you to pass an existing role to that service instead of creating a new service role or service-linked role. To do this, you must have permissions to pass the role to the service.

The following example error occurs when an IAM user named `marymajor` tries to use the console to perform an action in Amazon Inspector. However, the action requires the service to have

permissions that are granted by a service role. Mary does not have permissions to pass the role to the service.

```
User: arn:aws:iam::123456789012:user/marymajor is not authorized to perform:
 iam:PassRole
```

In this case, Mary's policies must be updated to allow her to perform the `iam:PassRole` action.

If you need help, contact your AWS administrator. Your administrator is the person who provided you with your sign-in credentials.

I want to allow people outside of my AWS account to access my Amazon Inspector 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 Inspector supports these features, see How Amazon Inspector 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 Cross account resource access in IAM in the *IAM User Guide*.

Monitoring Amazon Inspector

Monitoring is an important part of maintaining the availability, reliability, and performance of Amazon Inspector and other AWS solutions. AWS provides tools to monitor Amazon Inspector, report issues that occur, and take actions to remediate these issues:

- Amazon EventBridge is an AWS service that uses events to connect application components together, making it easier for you to build scalable event-driven applications. EventBridge delivers a stream of real-time data from your applications, Software-as-a-Service (SaaS) applications, and AWS services and routes, so you can monitor events that happen in services and build event-driven architectures.
- AWS CloudTrail is an AWS service that captures API calls and related events made by or on behalf of your AWS account. CloudTrail delivers the log files to an Amazon S3 bucket that you specify, so you can identify which users and accounts called AWS, the source IP address from where calls were made, and when the calls occurred.

Logging Amazon Inspector API calls using AWS CloudTrail

Amazon Inspector is integrated with AWS CloudTrail, a service that provides a record of actions taken by an IAM user or role, or an AWS service, in Amazon Inspector. CloudTrail captures all API calls for Amazon Inspector as events. The calls captured include calls from the Amazon Inspector console and calls to the Amazon Inspector API operations. If you create a trail, you can enable continuous delivery of CloudTrail events to an Amazon S3 bucket, including events for Amazon Inspector. 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 Inspector.
- The IP address from which the request was made.
- Who made the request.
- When the request was made.

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

Amazon Inspector information in CloudTrail

CloudTrail is enabled on your AWS account when you create the account. When activity occurs in Amazon Inspector, 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 Inspector, 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 topics:

- Overview for creating a trail
- CloudTrail supported services and integrations
- Configuring Amazon SNS notifications for CloudTrail
- Receiving CloudTrail log files from multiple accounts
- Receiving CloudTrail log files from multiple regions

All Amazon Inspector actions are logged by CloudTrail. All actions that Amazon Inspector can make are documented in the Amazon Inspector API Reference. For example, calls to the `CreateFindingsReport`, `ListCoverage`, and `UpdateOrganizationConfiguration` 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 user or IAM user credentials.
- Whether the request was made with temporary security credentials for a role or a federated user.
- Whether the request was made by another AWS service.

For more information, see the CloudTrail userIdentity element.

Understanding Amazon Inspector 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. Events include 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 Inspector Scan information in CloudTrail

Amazon Inspector Scan is integrated with CloudTrail. All Amazon Inspector Scan API operations are logged as management events. For a list of the Amazon Inspector Scan API operations that

Amazon Inspector logs to CloudTrail, see Amazon Inspector Scan in the Amazon Inspector API Reference.

The following example shows a CloudTrail log entry that demonstrates the `ScanSbom` action:


```
{
    "eventVersion": "1.08",
    "userIdentity": {
        "type": "AssumedRole",
        "principalId": "AROA123456789EXAMPLE:akua_mansa",
        "arn": "arn:aws:sts::111122223333:assumed-role/Admin/akua_mansa",
        "accountId": "111122223333",
        "accessKeyId": "AKIAIOSFODNN7EXAMPLE",
        "sessionContext": {
            "sessionIssuer": {
                "type": "Role",
                "principalId": "AROA123456789EXAMPLE",
                "arn": "arn:aws:iam::111122223333:role/Admin",
                "accountId": "111122223333",
                "userName": "Admin"
            },
            "webIdFederationData": {},
            "attributes": {
                "creationDate": "2023-10-17T15:22:59Z",
                "mfaAuthenticated": "false"
            }
        }
    },
    "eventTime": "2023-10-17T16:02:34Z",
    "eventSource": "gamma-inspector-scan.amazonaws.com",
    "eventName": "ScanSbom",
    "awsRegion": "us-east-1",
    "sourceIPAddress": "203.0.113.0",
    "userAgent": "aws-sdk-java/2.20.162 Mac_OS_X/13.5.2 OpenJDK_64-
Bit_Server_VM/17.0.8+7-LTS Java/17.0.8 vendor/Amazon.com_Inc. io/sync http/
UrlConnection cfg/retry-mode/legacy",
    "requestParameters": {
        "sbom": {
            "specVersion": "1.5",
            "metadata": {
                "component": {
                    "name": "debian",
                    "type": "operating-system",
```

```
                    "version": "9"
                }
            },
            "components": [
                {
                    "name": "packageOne",
                    "purl": "pkg:deb/debian/packageOne@1.0.0?arch=x86_64&distro=9",
                    "type": "application"
                }
            ],
            "bomFormat": "CycloneDX"
        }
    },
    "responseElements": null,
    "requestID": "f041a27f-f33e-4f70-b09b-5fbc5927282a",
    "eventID": "abc8d1e4-d214-4f07-bc56-8a31be6e36fe",
    "readOnly": true,
    "eventType": "AwsApiCall",
    "managementEvent": true,
    "recipientAccountId": "111122223333",
    "eventCategory": "Management"
}
```


Compliance validation for Amazon Inspector

To learn whether an AWS service is within the scope of specific compliance programs, see AWS services in Scope by Compliance Program and choose the compliance program that you are interested in. For general information, see AWS Compliance Programs.

You can download third-party audit reports using AWS Artifact. For more information, see Downloading Reports in AWS Artifact.

Your compliance responsibility when using AWS services is determined by the sensitivity of your data, your company's compliance objectives, and applicable laws and regulations. AWS provides the following resources to help with compliance:

- Security Compliance & Governance – These solution implementation guides discuss architectural considerations and provide steps for deploying security and compliance features.
- HIPAA Eligible Services Reference – Lists HIPAA eligible services. Not all AWS services are HIPAA eligible.

- AWS Compliance Resources – This collection of workbooks and guides might apply to your industry and location.
- AWS Customer Compliance Guides – Understand the shared responsibility model through the lens of compliance. The guides summarize the best practices for securing AWS services and map the guidance to security controls across multiple frameworks (including National Institute of Standards and Technology (NIST), Payment Card Industry Security Standards Council (PCI), and International Organization for Standardization (ISO)).
- Evaluating Resources with Rules in the *AWS Config Developer Guide* – The AWS Config service assesses how well your resource configurations comply with internal practices, industry guidelines, and regulations.
- AWS Security Hub – This AWS service provides a comprehensive view of your security state within AWS. Security Hub uses security controls to evaluate your AWS resources and to check your compliance against security industry standards and best practices. For a list of supported services and controls, see Security Hub controls reference.
- Amazon GuardDuty – This AWS service detects potential threats to your AWS accounts, workloads, containers, and data by monitoring your environment for suspicious and malicious activities. GuardDuty can help you address various compliance requirements, like PCI DSS, by meeting intrusion detection requirements mandated by certain compliance frameworks.
- AWS Audit Manager – This AWS service helps you continuously audit your AWS usage to simplify how you manage risk and compliance with regulations and industry standards.

Resilience in Amazon Inspector

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 to 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.

Infrastructure security in Amazon Inspector

As a managed service, Amazon Inspector is protected by AWS global network security. For information about AWS security services and how AWS protects infrastructure, see AWS Cloud

Security. To design your AWS environment using the best practices for infrastructure security, see Infrastructure Protection in *Security Pillar AWS Well-Architected Framework*.

You use AWS published API calls to access Amazon Inspector through the network. Clients must support the following:

- Transport Layer Security (TLS). We require TLS 1.2 and recommend TLS 1.3.
- Cipher suites with perfect forward secrecy (PFS) such as DHE (Ephemeral Diffie-Hellman) or ECDHE (Elliptic Curve Ephemeral Diffie-Hellman). Most modern systems such as Java 7 and later support these modes.

Additionally, requests must be signed by using an access key ID and a secret access key that is associated with an IAM principal. Or you can use the AWS Security Token Service (AWS STS) to generate temporary security credentials to sign requests.

Incident response in Amazon Inspector

Security is the highest priority at AWS. As mentioned in the AWS shared responsibility model under "Security of the Cloud," AWS is responsible for protecting the infrastructure running all of the services in the AWS Cloud. AWS is also responsible for any incident response associated with the Amazon Inspector service.

As an AWS customer, you share a responsibility for maintaining security in the AWS Cloud. This means you control the security you choose to implement, which includes all of the AWS tools and features you access. It also means you're responsible for incident response on your side of the shared responsibility model.

By establishing a security baseline that meets all of the objectives for your applications running in the AWS Cloud, you can detect deviations you can respond to. Because incident response is a complex topic, review the following resources to better understand the impact of incident response and how your choices might influence your corporate goals: AWS Security Incident Response Guide, AWS Security Best Practices, and AWS Cloud Adoption Framework: Security Perspective.

Access Amazon Inspector using an interface endpoint (AWS PrivateLink

You can use AWS PrivateLink to create a private connection between your VPC and Amazon Inspector. You can access Amazon Inspector as if it were in your VPC, without the use of an internet

gateway, NAT device, VPN connection, or AWS Direct Connect connection. Instances in your VPC don't need public IP addresses to access Amazon Inspector.

You establish this private connection by creating an *interface endpoint*, powered by AWS PrivateLink. We create an endpoint network interface in each subnet that you enable for the interface endpoint. These are requester-managed network interfaces that serve as the entry point for traffic destined for Amazon Inspector.

For more information, see Access AWS services through AWS PrivateLink in the *AWS PrivateLink Guide*.

Considerations for Amazon Inspector

Before you set up an interface endpoint for Amazon Inspector, review Considerations in the *AWS PrivateLink Guide*.

Amazon Inspector supports making calls to all of its API actions through the interface endpoint.

VPC endpoint policies are not supported for Amazon Inspector. By default, full access to Amazon Inspector is allowed through the interface endpoint. Alternatively, you can associate a security group with the endpoint network interfaces to control traffic to Amazon Inspector through the interface endpoint.

Create an interface endpoint for Amazon Inspector

You can create an interface endpoint for Amazon Inspector using either the Amazon VPC console or the AWS Command Line Interface (AWS CLI). For more information, see Create an interface endpoint in the *AWS PrivateLink Guide*.

When you create an interface endpoint for Amazon Inspector, use one of the following service names:

```
com.amazonaws.region.inspector2
```

```
com.amazonaws.region.inspector-scan
```

Replace *region* with the AWS Region code for the applicable AWS Region.

If you enable private DNS for the interface endpoint, you can make API requests to Amazon Inspector using its default Regional DNS name, for example, `service-name.us-`

`east-1.amazonaws.com` or `service-name.us-east-1.api.aws.com` for the US East (N. Virginia).

Amazon Inspector integrations

Amazon Inspector integrates with other AWS services. These services can ingest data from Amazon Inspector, so you can view your findings in different ways. Review the following integration options to learn more.

Integrating Amazon Inspector with Amazon ECR

Amazon Elastic Container Registry (Amazon ECR) is an AWS-managed container image registry that supports private registries. Amazon ECR private registries host container images in a highly-available and scalable architecture. You can use Amazon Inspector to scan container images residing in your Amazon ECR repository for vulnerable operating system packages and programming language packages. For more information, see Amazon Inspector integration with Amazon Elastic Container Registry (Amazon ECR).

Amazon Inspector integration with AWS Security Hub

AWS Security Hub provides a comprehensive view of your security state in AWS and helps you check your environment against security industry standards and best practices Security Hub collects security data from AWS accounts, services, and supported products. You can use Security Hub to ingest Amazon Inspector findings data and create a central location for findings in all of your integrated AWS services and AWS Partner Network products. For more information, see Amazon Inspector integration with AWS Security Hub.

Amazon Inspector integration with Amazon Elastic Container Registry (Amazon ECR)

Amazon Elastic Container Registry is a fully managed container registry that supports Docker and OCI images and AWS artifacts. If you use Amazon ECR, you can activate Enhanced Scanning for your container registry. When you activate enhanced scanning, Amazon Inspector automatically detects and scans your container images for vulnerable operating system and programming language packages. This integration allows you to view Amazon Inspector findings for container images and manage the frequency and scope of scans in the Amazon ECR console. For more information, see Scanning Amazon ECR container images with Amazon Inspector.

Activating the integration

You can activate the integration by activating Amazon Inspector scanning through the Amazon Inspector console or API, or by configuring your repository to use **Enhanced scanning** with Amazon Inspector through the Amazon ECR console or API.

For more information on activating the integration through Amazon Inspector, see Automated scan types in Amazon Inspector.

For information on activating and configuring **Enhanced scanning** in Amazon ECR, see Enhanced Scanning in the Amazon ECR user guide.

Using the integration with a multi-account environment

If you are a member in a multi-account environment, you can activate enhanced scanning through Amazon ECR. However, once activated, it can only be deactivated by your Amazon Inspector delegated administrator. If it is deactivated, it reverts to basic scanning. For more information, see Deactivating Amazon Inspector.

Amazon Inspector integration with AWS Security Hub

Security Hub provides a comprehensive view of your security state in AWS. This helps you check your environment against security industry standards and best practices. Security Hub collects security data from AWS accounts, services, and supported products. You can use this information to analyze security trends and identify security issues. When you activate the Amazon Inspector integration with Security Hub, Amazon Inspector can send findings to Security Hub, and Security Hub can analyze those findings as part of your security posture.

Security Hub tracks security issues as findings. Some findings can be a result of security issues detected in other AWS services or third-party products. Security Hub uses a set of rules to detect security issues and generate findings and provides tools, so you can manage findings. Security Hub archives Amazon Inspector findings once the findings have been closed in Amazon Inspector. You can also view a history of your findings and finding details, as well as track the status of an investigation into a finding.

Security Hub processes findings in the AWS Security Finding Format (ASFF). This format includes details such as unique identifiers, severity levels, affected resources, remediation guidance, workflow status, and contextual information.

> **Note**
>
> Security findings generated by Amazon Inspector Code Security are not available for this integration. However, you can access these particular findings in the Amazon Inspector console and through the Amazon Inspector API.

Topics

Viewing Amazon Inspector findings in AWS Security Hub

You can view Amazon Inspector Classic and Amazon Inspector findings in Security Hub.

> **Note**
>
> To filter on Amazon Inspector findings only, add `"aws/inspector/ProductVersion": "2"` to the filter bar. This filter excludes Amazon Inspector Classic findings from the Security Hub dashboard.

Example finding from Amazon Inspector

```
{
  "SchemaVersion": "2018-10-08",
  "Id": "arn:aws:inspector2:us-east-1:123456789012:finding/FINDING_ID",
  "ProductArn": "arn:aws:securityhub:us-east-1::product/aws/inspector",
  "ProductName": "Inspector",
  "CompanyName": "Amazon",
  "Region": "us-east-1",
  "GeneratorId": "AWSInspector",
  "AwsAccountId": "123456789012",
  "Types": [
    "Software and Configuration Checks/Vulnerabilities/CVE"
  ],
```

```
  "FirstObservedAt": "2023-01-31T20:25:38Z",
  "LastObservedAt": "2023-05-04T18:18:43Z",
  "CreatedAt": "2023-01-31T20:25:38Z",
  "UpdatedAt": "2023-05-04T18:18:43Z",
  "Severity": {
    "Label": "HIGH",
    "Normalized": 70
  },
  "Title": "CVE-2022-34918 - kernel",
  "Description": "An issue was discovered in the Linux kernel through 5.18.9. A type
 confusion bug in nft_set_elem_init (leading to a buffer overflow) could be used by a
 local attacker to escalate privileges, a different vulnerability than CVE-2022-32250.
 (The attacker can obtain root access, but must start with an unprivileged user
 namespace to obtain CAP_NET_ADMIN access.) This can be fixed in nft_setelem_parse_data
 in net/netfilter/nf_tables_api.c.",
  "Remediation": {
    "Recommendation": {
      "Text": "Remediation is available. Please refer to the Fixed version in the
 vulnerability details section above. For detailed remediation guidance for each of the
 affected packages, refer to the vulnerabilities section of the detailed finding JSON."
    }
  },
  "ProductFields": {
    "aws/inspector/FindingStatus": "ACTIVE",
    "aws/inspector/inspectorScore": "7.8",
    "aws/inspector/resources/1/resourceDetails/awsEc2InstanceDetails/platform":
 "AMAZON_LINUX_2",
    "aws/inspector/ProductVersion": "2",
    "aws/inspector/instanceId": "i-0f1ed287081bdf0fb",
    "aws/securityhub/FindingId": "arn:aws:securityhub:us-east-1::product/aws/inspector/
arn:aws:inspector2:us-east-1:123456789012:finding/FINDING_ID",
    "aws/securityhub/ProductName": "Inspector",
    "aws/securityhub/CompanyName": "Amazon"
  },
  "Resources": [
    {
      "Type": "AwsEc2Instance",
      "Id": "arn:aws:ec2:us-east-1:123456789012:i-0f1ed287081bdf0fb",
      "Partition": "aws",
      "Region": "us-east-1",
      "Tags": {
        "Patch Group": "SSM",
        "Name": "High-SEv-Test"
      },
```

```
      "Details": {
        "AwsEc2Instance": {
          "Type": "t2.micro",
          "ImageId": "ami-0cff7528ff583bf9a",
          "IpV4Addresses": [
            "52.87.229.97",
            "172.31.57.162"
          ],
          "KeyName": "ACloudGuru",
          "IamInstanceProfileArn": "arn:aws:iam::123456789012:instance-profile/
AmazonSSMRoleForInstancesQuickSetup",
          "VpcId": "vpc-a0c2d7c7",
          "SubnetId": "subnet-9c934cb1",
          "LaunchedAt": "2022-07-26T21:49:46Z"
        }
      }
    }
  ],
  "WorkflowState": "NEW",
  "Workflow": {
    "Status": "NEW"
  },
  "RecordState": "ACTIVE",
  "Vulnerabilities": [
    {
      "Id": "CVE-2022-34918",
      "VulnerablePackages": [
        {
          "Name": "kernel",
          "Version": "5.10.118",
          "Epoch": "0",
          "Release": "111.515.amzn2",
          "Architecture": "X86_64",
          "PackageManager": "OS",
          "FixedInVersion": "0:5.10.130-118.517.amzn2",
          "Remediation": "yum update kernel"
        }
      ],
      "Cvss": [
        {
          "Version": "2.0",
          "BaseScore": 7.2,
          "BaseVector": "AV:L/AC:L/Au:N/C:C/I:C/A:C",
          "Source": "NVD"
```

```
        },
        {
          "Version": "3.1",
          "BaseScore": 7.8,
          "BaseVector": "CVSS:3.1/AV:L/AC:L/PR:L/UI:N/S:U/C:H/I:H/A:H",
          "Source": "NVD"
        },
        {
          "Version": "3.1",
          "BaseScore": 7.8,
          "BaseVector": "CVSS:3.1/AV:L/AC:L/PR:L/UI:N/S:U/C:H/I:H/A:H",
          "Source": "NVD",
          "Adjustments": []
        }
      ],
      "Vendor": {
        "Name": "NVD",
        "Url": "https://nvd.nist.gov/vuln/detail/CVE-2022-34918",
        "VendorSeverity": "HIGH",
        "VendorCreatedAt": "2022-07-04T21:15:00Z",
        "VendorUpdatedAt": "2022-10-26T17:05:00Z"
      },
      "ReferenceUrls": [
        "https://git.kernel.org/pub/scm/linux/kernel/git/netdev/net.git/commit/?
id=7e6bc1f6cabcd30aba0b11219d8e01b952eacbb6",
        "https://lore.kernel.org/netfilter-devel/cd9428b6-7ffb-dd22-d949-
d86f4869f452@randorisec.fr/T/",
        "https://www.debian.org/security/2022/dsa-5191"
      ],
      "FixAvailable": "YES"
    }
  ],
  "FindingProviderFields": {
    "Severity": {
      "Label": "HIGH"
    },
    "Types": [
      "Software and Configuration Checks/Vulnerabilities/CVE"
    ]
  },
  "ProcessedAt": "2023-05-05T20:28:38.822Z"
}
```

Activating and configuring the Amazon Inspector integration with Security Hub

You can activate the Amazon Inspector integration with AWS Security Hub by enabling Security Hub. After you enable Security Hub, the Amazon Inspector integration with AWS Security Hub is automatically activated, and Amazon Inspector begins sending all of its findings to Security Hub using the AWS Security Finding Format (ASFF).

Disabling the flow of findings from an integration

To stop Amazon Inspector from sending findings to Security Hub, you can use the Security Hub console or API and AWS CLI..

Viewing security controls for Amazon Inspector in Security Hub

Security Hub analyzes findings from supported AWS and third-party products and runs automated and continuous security checks against rules to generate findings of its own. The rules are represented by security controls, which help you determine whether requirements in a standard are being met.

Amazon Inspector uses security controls to check whether Amazon Inspector features are or should be enabled. These features include the following:

- Amazon EC2 scanning
- Amazon ECR scanning
- Lambda standard scanning
- Lambda code scanning

For more information, see Amazon Inspector controls in the *AWS Security Hub User Guide*.

Supported operating systems and programming languages for Amazon Inspector

Amazon Inspector can scan software applications that are installed on the following:

- Amazon Elastic Compute Cloud (Amazon EC2) instances

> **Note**
>
> For Amazon EC2 instances, Amazon Inspector can scan for package vulnerabilities in operating systems that support agent-based scanning. Amazon Inspector can also scan for package vulnerabilities in operating systems and programming languages that support hybrid scanning. Amazon Inspector does not scan for toolchain vulnerabilities. The version of the programming language compiler used to build the application introduces these vulnerabilities.

- Container images stored in Amazon Elastic Container Registry (Amazon ECR) repositories

> **Note**
>
> For ECR container images, Amazon Inspector can scan for operating system and programming language package vulnerabilities. Amazon Inspector does not scan for toolchain vulnerabilities in Rust. The version of the programming language compiler used to build the application introduces these vulnerabilities.

- AWS Lambda functions

> **Note**
>
> For Lambda functions, Amazon Inspector can scan for programming language package vulnerabilities and code vulnerabilities. Amazon Inspector does not scan for toolchain vulnerabilities. The version of the programming language compiler used to build the application introduces these vulnerabilities.

When Amazon Inspector scans resources, Amazon Inspector sources more than 50 data feeds to generate findings for common vulnerabilities and exposures (CVEs). Examples of these sources

include vendor security advisories data feeds and threat intelligence feeds, as well as the National Vulnerability Database (NVD) and MITRE. Amazon Inspector updates vulnerability data from source feeds at least once daily.

For Amazon Inspector to scan a resource, the resource must be running a supported operating system or using a supported programming language. The topics in this section list the operating systems, programming languages, and runtimes Amazon Inspector supports for different resources and scan types. They also list discontinued operating systems.

> **Note**
>
> Amazon Inspector can provide only limited support for an operating system after a vendor discontinues support for the operating system.

Topics

Supported operating systems

This section lists the operating systems Amazon Inspector supports.

Supported operating systems: Amazon EC2 scanning

The following table lists the operating systems Amazon Inspector supports for the scanning of Amazon EC2 instances. It specifies the vendor security advisory for each operating system and which operating systems support agent-based scanning and agentless scanning.

When using the agent-based scanning method, you configure the SSM agent to perform continuous scans on all eligible instances. Amazon Inspector recommends that you configure a version of the SSM agent that's greater than 3.2.2086.0. For more information, see Working with the SSM Agent in the *Amazon EC2 Systems Manager User Guide*.

Linux operating system detections are supported only for the default package manager repository (rpm and dpkg) and don't include third-party applications, extended support repositories (RHEL

EUS, E4S, AUS, and TUS), and optional repositories (application streams). Amazon Inspector scans the running kernel for vulnerabilities. For some operating systems, like Ubuntu, a reboot is required for upgrades to show in active findings.

Operating system	Version	Vendor security advisories	Agentless scan support	Agent-based scan support
AlmaLinux	8	ALSA	Yes	Yes
AlmaLinux	9	ALSA	Yes	Yes
Amazon Linux (AL2)	AL2	ALAS	Yes	Yes
Amazon Linux 2023 (AL2023)	AL2023	ALAS	Yes	Yes
Bottlerocket	1.7.0 and later	GHSA, CVE	No	Yes
Debian Server (Bullseye)	11	DSA	Yes	Yes
Debian Server (Bookworm)	12	DSA	Yes	Yes
Fedora	40	CVE	Yes	Yes
Fedora	41	CVE	Yes	Yes
OpenSUSE Leap	15.6	CVE	Yes	Yes
Oracle Linux (Oracle)	8	ELSA	Yes	Yes
Oracle Linux (Oracle)	9	ELSA	Yes	Yes
Red Hat Enterprise Linux (RHEL)	8	RHSA	Yes	Yes

Operating system	Version	Vendor security advisories	Agentless scan support	Agent-based scan support
Red Hat Enterprise Linux (RHEL)	9	RHSA	Yes	Yes
Rocky Linux	8	RLSA	Yes	Yes
Rocky Linux	9	RLSA	Yes	Yes
SUSE Linux Enterprise Server (SLES)	15.6	SUSE CVE	Yes	Yes
Ubuntu (Xenial)	16.04	USN, Ubuntu Pro (esm-infra & esm-apps)	Yes	Yes
Ubuntu (Bionic)	18.04	USN, Ubuntu Pro (esm-infra & esm-apps)	Yes	Yes
Ubuntu (Focal)	20.04	USN, Ubuntu Pro (esm-infra & esm-apps)	Yes	Yes
Ubuntu (Jammy)	22.04	USN, Ubuntu Pro (esm-infra & esm-apps)	Yes	Yes
Ubuntu (Noble Numbat)	24.04	USN, Ubuntu Pro (esm-infra & esm-apps)	Yes	Yes
Windows Server	2016	MSKB	No	Yes
Windows Server	2019	MSKB	No	Yes

Operating system	Version	Vendor security advisories	Agentless scan support	Agent-based scan support
Windows Server	2022	MSKB	No	Yes
Windows Server	2025	MSKB	No	Yes
macOS (Mojave)	10.14	APPLE-SA	No	Yes
macOS (Catalina)	10.15	APPLE-SA	No	Yes
macOS (Big Sur)	11	APPLE-SA	No	Yes
macOS (Monterey)	12	APPLE-SA	No	Yes
macOS (Ventura)	13	APPLE-SA	No	Yes
macOS (Sonoma)	14	APPLE-SA	No	Yes
macOS (Sequoia)	15	APPLE-SA	No	Yes

Supported operating systems: Amazon ECR scanning with Amazon Inspector

The following table lists the operating systems Amazon Inspector supports for the scanning of container images in Amazon ECR repositories. It also specifies the vendor security advisory for each operating system.

Operating system	Version	Vendor security advisories
Alpine Linux (Alpine)	3.19	Alpine SecDB
Alpine Linux (Alpine)	3.20	Alpine SecDB

Operating system	Version	Vendor security advisories
Alpine Linux (Alpine)	3.21	Alpine SecDB
Alpine Linux (Alpine)	3.22	Alpine SecDB
AlmaLinux	8	ALSA
AlmaLinux	9	ALSA
Amazon Linux (AL2)	AL2	ALAS
Amazon Linux 2023 (AL2023)	AL2023	ALAS
BusyBox	—	—
Chainguard	–	CVE
Debian Server (Bullseye)	11	DSA
Debian Server (Bookworm)	12	DSA
Fedora	41	CVE
Fedora	42	CVE
OpenSUSE Leap	15.6	CVE
Oracle Linux (Oracle)	8	ELSA
Oracle Linux (Oracle)	9	ELSA
Photon OS	4	PHSA
Photon OS	5	PHSA
Red Hat Enterprise Linux (RHEL)	8	RHSA
Red Hat Enterprise Linux (RHEL)	9	RHSA

Operating system	Version	Vendor security advisories
Rocky Linux	8	RLSA
Rocky Linux	9	RLSA
SUSE Linux Enterprise Server (SLES)	15.6	SUSE CVE
Ubuntu (Xenial)	16.04	USN, Ubuntu Pro (esm-infra & esm-apps)
Ubuntu (Bionic)	18.04	USN, Ubuntu Pro (esm-infra & esm-apps)
Ubuntu (Focal)	20.04	USN, Ubuntu Pro (esm-infra & esm-apps)
Ubuntu (Jammy)	22.04	USN, Ubuntu Pro (esm-infra & esm-apps)
Ubuntu (Noble Numbat)	24.04	USN, Ubuntu Pro (esm-infra & esm-apps)
Ubuntu (Plucky Puffin)	25.04	USN
Wolfi	–	CVE

Supported operating systems: CIS scanning

The following table lists the operating systems Amazon Inspector supports for CIS scans. It also specifies the CIS benchmark version for each operating system.

Note

CIS standards are intended for x86_64 operating systems. Some checks may not be evaluated or return invalid remediation instructions on ARM-based resources.

Operating system	Version	CIS benchmark version
Amazon Linux 2	AL2	3.0.0
Amazon Linux 2023	AL2023	1.0.0
Red Hat Enterprise Linux (RHEL)	8	3.0.0
Red Hat Enterprise Linux (RHEL)	9	2.0.0
Rocky Linux	8	2.0.0
Rocky Linux	9	1.0.0
SUSE Linux Enterprise Server	15	2.0.1
Ubuntu (Bonic)	18.04	2.1.0
Ubuntu (Focal)	20.04	2.0.1
Ubuntu (Jammy)	22.04	1.0.0
Ubuntu (Noble Numbat)	24.04	1.0.0
Windows Server	2016	3.0.0
Windows Server	2019	2.0.0
Windows Server	2022	2.0.0

Discontinued operating systems

The following tables list which operating systems have been discontinued and when they were discontinued.

Even though Amazon Inspector doesn't provide full support for the following discontinued operating systems, Amazon Inspector continues to scan the Amazon EC2 instances and Amazon ECR container images running them. As a security best practice, we recommend moving to the

supported version of a discontinued operating system. Findings that Amazon Inspector generates for a discontinued operating system should be used for informational purposes only.

In accordance with vendor policy, the following operating systems no longer receive patch updates. New security advisories might not be released for discontinued operating systems. Vendors can remove existing security advisories and detections from their feeds for operating systems that reach the end of standard support. As a result, Amazon Inspector can stop generating findings for known CVEs.

Discontinued operating systems: Amazon EC2 scanning

Operating system	Version	Discontinued
Amazon Linux (AL1)	2012	December 31, 2021
CentOS Linux (CentOS)	7	June 30, 2024
CentOS Linux (CentOS)	8	December 31, 2021
Debian Server (Jessie)	8	June 30, 2020
Debian Server (Stretch)	9	June 30, 2022
Debian Server (Buster)	10	June 30, 2024
Fedora	33	November 30, 2021
Fedora	34	June 7, 2022
Fedora	35	December 13, 2022
Fedora	36	May 16, 2023
Fedora	37	December 15, 2023
Fedora	38	May 21, 2024
Fedora	39	November 26, 2024
Fedora	40	May 13, 2025

Operating system	Version	Discontinued
OpenSUSE Leap	15.2	December 1, 2021
OpenSUSE Leap	15.3	December 1, 2022
OpenSUSE Leap	15.4	December 7, 2023
OpenSUSE Leap	15.5	December 31, 2024
Oracle Linux (Oracle)	6	March 1, 2021
Oracle Linux (Oracle)	7	December 31, 2024
Red Hat Enterprise Linux (RHEL)	6	November 30, 2020
Red Hat Enterprise Linux (RHEL)	7	June 30, 2024
SUSE Linux Enterprise Server (SLES)	12	June 30, 2016
SUSE Linux Enterprise Server (SLES)	12.1	May 31, 2017
SUSE Linux Enterprise Server (SLES)	12.2	March 31, 2018
SUSE Linux Enterprise Server (SLES)	12.3	June 30, 2019
SUSE Linux Enterprise Server (SLES)	12.4	June 30, 2020
SUSE Linux Enterprise Server (SLES)	12.5	October 31, 2024
SUSE Linux Enterprise Server (SLES)	15	December 31, 2019

Operating system	Version	Discontinued
SUSE Linux Enterprise Server (SLES)	15.1	January 31, 2021
SUSE Linux Enterprise Server (SLES)	15.2	December 31, 2021
SUSE Linux Enterprise Server (SLES)	15.3	December 31, 2022
SUSE Linux Enterprise Server (SLES)	15.4	December 31, 2023
SUSE Linux Enterprise Server (SLES)	15.5	December 31, 2024
Ubuntu (Trusty)	12.04	April 28, 2017
Ubuntu (Trusty)	14.04	April 1, 2024
Ubuntu (Groovy)	20.10	July 22, 2021
Ubuntu (Hirsute)	21.04	January 20, 2022
Ubuntu (Impish)	21.10	July 31, 2022
Ubuntu (Kinetic)	22.10	July 20, 2023
Ubuntu (Lunar Lobster)	23.04	January 25, 2024
Ubuntu (Mantic Minotaur)	23.10	July 11, 2024
Ubuntu (Oracular Oriole)	24.10	July 10, 2025
Windows Server	2012	October 10, 2023
Windows Server	2012 R2	October 10, 2023

Discontinued operating systems: Amazon ECR scanning

Operating system	Version	Discontinued
Alpine Linux (Alpine)	3.2	May 1, 2017
Alpine Linux (Alpine)	3.3	November 1, 2017
Alpine Linux (Alpine)	3.4	May 1, 2018
Alpine Linux (Alpine)	3.5	November 1, 2018
Alpine Linux (Alpine)	3.6	May 1, 2019
Alpine Linux (Alpine)	3.7	November 1, 2019
Alpine Linux (Alpine)	3.8	May 1, 2020
Alpine Linux (Alpine)	3.9	November 1, 2020
Alpine Linux (Alpine)	3.10	May 1, 2021
Alpine Linux (Alpine)	3.11	November 1, 2021
Alpine Linux (Alpine)	3.12	May 1, 2022
Alpine Linux (Alpine)	3.13	November 1, 2022
Alpine Linux (Alpine)	3.14	May 1, 2023
Alpine Linux (Alpine)	3.15	November 1, 2023
Alpine Linux (Alpine)	3.16	May 23, 2024
Alpine Linux (Alpine)	3.17	November 22, 2024
Alpine Linux (Alpine)	3.18	May 09 2025
Amazon Linux (AL1)	2012	December 31, 2021
CentOS Linux (CentOS)	7	June 30, 2024
CentOS Linux (CentOS)	8	December 31, 2021

Operating system	Version	Discontinued
Debian Server (Jessie)	8	June 30, 2020
Debian Server (Stretch)	9	June 30, 2022
Debian Server (Buster)	10	June 30, 2024
Fedora	33	November 30, 2021
Fedora	34	June 7, 2022
Fedora	35	December 13, 2022
Fedora	36	May 16, 2023
Fedora	37	December 15, 2023
Fedora	38	May 21, 2024
Fedora	39	November 26, 2024
Fedora	40	May 13, 2025
OpenSUSE Leap	15.2	December 1, 2021
OpenSUSE Leap	15.3	December 1, 2022
OpenSUSE Leap	15.4	December 7, 2023
OpenSUSE Leap	15.5	December 31, 2024
Oracle Linux (Oracle)	6	March 1, 2021
Oracle Linux (Oracle)	7	December 31, 2024
Photon OS	2	December 2, 2021
Photon OS	3	March 1, 2024
Red Hat Enterprise Linux (RHEL)	6	June 30, 2020

Operating system	Version	Discontinued
Red Hat Enterprise Linux (RHEL)	7	June 30, 2024
SUSE Linux Enterprise Server (SLES)	12	June 30, 2016
SUSE Linux Enterprise Server (SLES)	12.1	May 31, 2017
SUSE Linux Enterprise Server (SLES)	12.2	March 31, 2018
SUSE Linux Enterprise Server (SLES)	12.3	June 30, 2019
SUSE Linux Enterprise Server (SLES)	12.4	June 30, 2020
SUSE Linux Enterprise Server (SLES)	12.5	October 31, 2024
SUSE Linux Enterprise Server (SLES)	15	December 31, 2019
SUSE Linux Enterprise Server (SLES)	15.1	January 31, 2021
SUSE Linux Enterprise Server (SLES)	15.2	December 31, 2021
SUSE Linux Enterprise Server (SLES)	15.3	December 31, 2022
SUSE Linux Enterprise Server (SLES)	15.4	December 31, 2023
SUSE Linux Enterprise Server (SLES)	15.5	December 31, 2024

Operating system	Version	Discontinued
Ubuntu (Trusty)	12.04	April 28, 2017
Ubuntu (Trusty)	14.04	April 1, 2024
Ubuntu (Groovy)	20.10	July 22, 2021
Ubuntu (Hirsute)	21.04	January 20, 2022
Ubuntu (Impish)	21.10	July 31, 2022
Ubuntu (Kinetic)	22.10	July 20, 2023
Ubuntu (Lunar Lobster)	23.04	January 25, 2024
Ubuntu (Mantic Minotaur)	23.10	July 11, 2024
Ubuntu (Oracular Oriole)	24.10	July 10, 2025

Supported programming languages

This section lists the programming languages Amazon Inspector supports.

Supported programming languages: Amazon EC2 agentless scanning

Amazon Inspector currently supports the following programming languages when performing agentless scans on eligible Amazon EC2 instances. For more information, see agentless scanning.

> **Note**
>
> Amazon Inspector doesn't scan for toolchain vulnerabilities in Go and Rust. The version of the programming language compiler used to build the application introduces these vulnerabilities.

- C#
- Go
- Java

- JavaScript
- PHP
- Python
- Ruby
- Rust

Supported programming languages: Amazon EC2 deep inspection

Amazon Inspector currently supports the following programming languages when performing deep inspection scans on Amazon EC2 Linux instances. For more information, see Amazon Inspector deep inspection for Linux-based Amazon EC2 instances.

- Java (.ear, .jar, .par, and .war archive formats)
- JavaScript
- Python

Amazon Inspector uses Systems Manager Distributor to deploy the plugin for deep inspection of your Amazon EC2 instance.

> **Note**
>
> Deep inspection is not supported for Bottlerocket operating systems.

To perform deep inspection scans, Systems Manager Distributor and Amazon Inspector must support your Amazon EC2 instance operating system. For information about supported operating systems in Systems Manager Distributor, see Supported package platforms and architectures in the *Systems Manager User Guide*.

Supported programming languages: Amazon ECR scanning

Amazon Inspector currently supports the following programming languages when scanning container images in Amazon ECR repositories:

> **Note**
>
> Amazon Inspector doesn't scan for toolchain vulnerabilities in Rust. The version of the programming language compiler used to build the application introduces these vulnerabilities.

- C#
- Go
- Go toolchain
- Java
- Java JDK
- JavaScript
- PHP
- Python
- Ruby
- Rust

Supported runtimes

This section lists the runtimes Amazon Inspector supports.

Supported runtimes: Amazon Inspector Lambda standard scanning

Amazon Inspector Lambda standard scanning currently supports the following runtimes for the programming languages it can use when scanning Lambda functions for vulnerabilities in third-party software packages:

> **Note**
>
> Amazon Inspector doesn't scan for toolchain vulnerabilities in Rust. The version of the programming language compiler used to build the application introduces these vulnerabilities.

- Go

  - go1.x
- Java
  - java8
  - java8.al2
  - java11
  - java17
  - java21
- .NET
  - .NET 6
  - .NET 8
- Node.js
  - nodejs12.x
  - nodejs14.x
  - nodejs16.x
  - nodejs18.x
  - nodejs20.x
  - nodejs22.x
- Python
  - python3.7
  - python3.8
  - python3.9
  - python3.10
  - python3.11
  - python3.12
  - python3.13
- Ruby
  - ruby2.7
  - ruby3.2
  - ruby3.3
- Custom runtimes

- AL2
- AL2023

Supported runtimes: Amazon Inspector Lambda code scanning

Amazon Inspector Lambda code scanning currently supports the following runtimes for the programming languages it can use when scanning Lambda functions for vulnerabilities in code:

- Java
  - java8
  - java8.al2
  - java11
  - java17
- .NET
  - .NET 6
  - .NET 8
- Node.js
  - nodejs12.x
  - nodejs14.x
  - nodejs16.x
  - nodejs18.x
  - nodejs20.x
- Python
  - python3.7
  - python3.8
  - python3.9
  - python3.10
  - python3.11
  - python3.12
- Ruby
  - ruby2.7
  - ruby3.2

- ruby3.3

Deactivating Amazon Inspector

You can deactivate Amazon Inspector in the Amazon Inspector console or with the Amazon Inspector API. If you deactivate all scan types for an account;, Amazon Inspector is deactivated for that account automatically.

If you deactivate Amazon Inspector for an account, all scan types are deactivated for that account. Additionally, all Amazon Inspector scan settings, inclduing filters, suppression rules, and findings are deleted for the account.

When you deactivate Amazon Inspector Amazon EC2 scanning,Amazon Inspector deletes the following SSM associations:

- `InspectorDistributor-do-not-delete`
- `InspectorInventoryCollection-do-not-delete`
- `InvokeInspectorSsmPlugin-do-not-delete`. Additionally, the Amazon Inspector SSM plugin installed through this association is removed from all of your Windows hosts. For more information, see Scanning Windows EC2 instance.

> **Note**
>
> Once you deactivate Amazon Inspector, you no longer incur service charges. However, you can reactivate Amazon Inspector at any time.

For information about how to deactivate scan types for different resources, see Deactivating a scan type.

Prerequisites

Depending on the account type, consider the following:

- If your account is a standalone Amazon Inspector account, you can deactivate Amazon Inspector at any time.
- If your account is a member account in a multi-account environment, you cannot deactivate Amazon Inspector. You must contact the delegated administrator for your organization to deactivate Amazon Inspector.

- If you're the delegated administrator for an organization, you must disassociate all of your member accounts before you deactivate Amazon Inspector.

> **Note**
>
> When you deactivate Amazon Inspector as the delegated administrator, you deactivate the auto-activate feature for your organization.

Deactivate Amazon Inspector

> **Note**
>
> Before you deactivate Amazon Inspector, consider exporting your findings.

Console

To deactivate Amazon Inspector

1. Sign in using your credentials, and then open the Amazon Inspector console at https://console.aws.amazon.com/inspector/v2/home.
2. By using the AWS Region selector in the upper-right corner of the page, choose the Region in which you want to deactivate Amazon Inspector.
3. In the navigation pane, choose **General settings**.
4. Choose **Deactivate Inspector**.
5. When prompted for confirmation, enter **deactivate** in the text box, and then choose **Deactivate Inspector**.
6. (Recommended) Repeat these steps in each Region for which you want to deactivate Amazon Inspector.

API

Run the Disable API operation. In the request, provide the account IDs you are deactivating, and `EC2, ECR, LAMBDA` for `resourceTypes` to deactivate all scans, which will deactivate the account.

Amazon Inspector quotas

This section lists Amazon Inspector quotas per AWS Region.

Resource	Default	Comments
Member accounts	10,000	The maximum number of member accounts associated with an Amazon Inspector delegated administrator account. The limit is based on Quotas for AWS Organizations.
Suppression rules	500	The maximum number of saved suppression rules per AWS account per Region. You cannot request a quota increase.
Amazon EC2 network findings	10,000	The maximum number of Amazon EC2 network findings per AWS account. You cannot request a quota increase.
CIS scan configurations	500	The maximum number of CIS scan configurations. You cannot request a quota increase.

For a list of quotas associated with Amazon Inspector Classic, see Amazon Inspector Classic service quotas in the *AWS General Reference*. For a list of quotas associated with AWS Organizations, see AWS Organizations service quotas in the *AWS General Reference*.

Regions and endpoints

This topic includes tables that show endpoints for Amazon Inspector and Amazon Inspector Scan. It also includes tables that show which AWS Regions support Amazon Inspector features. To view the AWS Regions where Amazon Inspector is available, see Amazon Inspector endpoint and quotas in the *Amazon Web Services General Reference*.

Service endpoints for Amazon Inspector

The following table shows the service endpoints for Amazon Inspector. The naming convention for Amazon Inspector endpoints is `inspector2.Region.amazonaws.com`.

Region Name	Region	Endpoint	Protocol
US East (Ohio)	us-east-2	inspector2.us-east-2.amazonaws.com	HTTPS
		inspector2-fips.us-east-2.amazonaws.com	HTTPS
US East (N. Virginia)	us-east-1	inspector2.us-east-1.amazonaws.com	HTTPS
		inspector2-fips.us-east-1.amazonaws.com	HTTPS
US West (N. California)	us-west-1	inspector2.us-west-1.amazonaws.com	HTTPS
		inspector2-fips.us-west-1.amazonaws.com	HTTPS
US West (Oregon)	us-west-2	inspector2.us-west-2.amazonaws.com	HTTPS
		inspector2-fips.us-west-2.amazonaws.com	HTTPS
Africa (Cape Town)	af-south-1	inspector2.af-south-1.amazonaws.com	HTTPS
Asia Pacific	ap-east-1	inspector2.ap-east-1.amazonaws.com	HTTPS

Region Name	Region	Endpoint	Protocol
(Hong Kong)			
Asia Pacific (Hyderabad)	ap-south-2	inspector2.ap-south-2.amazonaws.com	HTTPS
Asia Pacific (Jakarta)	ap-southeast-3	inspector2.ap-southeast-3.amazonaws.com	HTTPS
Asia Pacific (Malaysia)	ap-southeast-5	inspector2.ap-southeast-5.amazonaws.com	HTTPS
Asia Pacific (Melbourne)	ap-southeast-4	inspector2.ap-southeast-4.amazonaws.com	HTTPS
Asia Pacific (Mumbai)	ap-south-1	inspector2.ap-south-1.amazonaws.com	HTTPS
Asia Pacific (Osaka)	ap-northeast-3	inspector2.ap-northeast-3.amazonaws.com	HTTPS
Asia Pacific (Seoul)	ap-northeast-2	inspector2.ap-northeast-2.amazonaws.com	HTTPS

Region Name	Region	Endpoint	Protocol
Asia Pacific (Singapore)	ap-southeast-1	inspector2.ap-southeast-1.amazonaws.com	HTTPS
Asia Pacific (Sydney)	ap-southeast-2	inspector2.ap-southeast-2.amazonaws.com	HTTPS
Asia Pacific (Thailand)	ap-southeast-7	inspector2.ap-southeast-7.amazonaws.com	HTTPS
Asia Pacific (Tokyo)	ap-northeast-1	inspector2.ap-northeast-1.amazonaws.com	HTTPS
Canada (Central)	ca-central-1	inspector2.ca-central-1.amazonaws.com	HTTPS
Canada West (Calgary)	ca-west-1	inspector2.ca-west-1.amazonaws.com	HTTPS
Europe (Frankfurt)	eu-central-1	inspector2.eu-central-1.amazonaws.com	HTTPS
Europe (Ireland)	eu-west-1	inspector2.eu-west-1.amazonaws.com	HTTPS
Europe (London)	eu-west-2	inspector2.eu-west-2.amazonaws.com	HTTPS

Region Name	Region	Endpoint	Protocol
Europe (Milan)	eu-south-1	inspector2.eu-south-1.amazonaws.com	HTTPS
Europe (Paris)	eu-west-3	inspector2.eu-west-3.amazonaws.com	HTTPS
Europe (Spain)	eu-south-2	inspector2.eu-south-2.amazonaws.com	HTTPS
Europe (Stockholm)	eu-north-1	inspector2.eu-north-1.amazonaws.com	HTTPS
Europe (Zurich)	eu-central-2	inspector2.eu-central-2.amazonaws.com	HTTPS
Israel (Tel Aviv)	il-central-1	inspector2.il-central-1.amazonaws.com	HTTPS
Mexico (Central)	mx-central-1	inspector2.mx-central-1.amazonaws.com	HTTPS
Middle East (Bahrain)	me-south-1	inspector2.me-south-1.amazonaws.com	HTTPS
Middle East (UAE)	me-central-1	inspector2.me-central-1.amazonaws.com	HTTPS
South America (São Paulo)	sa-east-1	inspector2.sa-east-1.amazonaws.com	HTTPS

Region Name	Region	Endpoint	Protocol
AWS GovCloud (US-East)	us-gov-east-1	inspector2.us-gov-east-1.amazonaws.com	HTTPS
		inspector2-fips.us-gov-east-1.amazonaws.com	HTTPS
AWS GovCloud (US-West)	us-gov-west-1	inspector2.us-gov-west-1.amazonaws.com	HTTPS
		inspector2-fips.us-gov-west-1.amazonaws.com	HTTPS

Endpoints for Amazon Inspector Scan API

The following table shows the Regional endpoints that can be used when calling the Amazon Inspector Scan API. When using the API, you must supply the endpoint and it's corresponding Region for the AWS Region you're currently authenticated to.

The naming convention for Amazon Inspector Scan endpoints is `inspector-scan.`*`region`*`.amazonaws.com`. For example, if you are authenticated in `us-west-2`, you would use the endpoint `inspector-scan.us-west-2.amazonaws.com` to call the `inspector-scan` API.

Region Name	Region	Endpoint	Protocol
US East (Ohio)	us-east-2	inspector-scan.us-east-2.amazonaws.com	HTTPS
		inspector-scan-fips.us-east-2.amazonaws.com	HTTPS
US East (N. Virginia)	us-east-1	inspector-scan.us-east-1.amazonaws.com	HTTPS
		inspector-scan-fips.us-east-1.amazonaws.com	HTTPS
US West (N.	us-west-1	inspector-scan.us-west-1.amazonaws.com	HTTPS
		inspector-scan-fips.us-west-1.amazonaws.com	HTTPS

Region Name	Region	Endpoint	Protocol
California)			
US West (Oregon)	us-west-2	inspector-scan.us-west-2.amazonaws.com inspector-scan-fips.us-west-2.amazonaws.com	HTTPS HTTPS
Africa (Cape Town)	af-south-1	inspector-scan.af-south-1.amazonaws.com	HTTPS
Asia Pacific (Hong Kong)	ap-east-1	inspector-scan.ap-east-1.amazonaws.com	HTTPS
Asia Pacific (Hyderabad)	ap-south-2	inspector-scan.ap-south-2.amazonaws.com	HTTPS
Asia Pacific (Jakarta)	ap-southeast-3	inspector-scan.ap-southeast-3.amazonaws.com	HTTPS
Asia Pacific (Malaysia)	ap-southeast-5	inspector-scan.ap-southeast-5.amazonaws.com	HTTPS
Asia Pacific (Melbourne)	ap-southeast-4	inspector-scan.ap-southeast-4.amazonaws.com	HTTPS

Region Name	Region	Endpoint	Protocol
Asia Pacific (Mumbai)	ap-south-1	inspector-scan.ap-south-1.amazonaws.com	HTTPS
Asia Pacific (Osaka)	ap-northeast-3	inspector-scan.ap-northeast-3.amazonaws.com	HTTPS
Asia Pacific (Seoul)	ap-northeast-2	inspector-scan.ap-northeast-2.amazonaws.com	HTTPS
Asia Pacific (Singapore)	ap-southeast-1	inspector-scan.ap-southeast-1.amazonaws.com	HTTPS
Asia Pacific (Sydney)	ap-southeast-2	inspector-scan.ap-southeast-2.amazonaws.com	HTTPS
Asia Pacific (Thailand)	ap-southeast-7	inspector-scan.ap-southeast-7.amazonaws.com	HTTPS
Asia Pacific (Tokyo)	ap-northeast-1	inspector-scan.ap-northeast-1.amazonaws.com	HTTPS
Canada (Central)	ca-central-1	inspector-scan.ca-central-1.amazonaws.com	HTTPS
Canada West (Calgary)	ca-west-1	inspector-scan.ca-west-1.amazonaws.com	HTTPS

Region Name	Region	Endpoint	Protocol
Europe (Frankfurt)	eu-central-1	inspector-scan.eu-central-1.amazonaws.com	HTTPS
Europe (Ireland)	eu-west-1	inspector-scan.eu-west-1.amazonaws.com	HTTPS
Europe (London)	eu-west-2	inspector-scan.eu-west-2.amazonaws.com	HTTPS
Europe (Milan)	eu-south-1	inspector-scan.eu-south-1.amazonaws.com	HTTPS
Europe (Paris)	eu-west-3	inspector-scan.eu-west-3.amazonaws.com	HTTPS
Europe (Spain)	eu-south-2	inspector-scan.eu-south-2.amazonaws.com	HTTPS
Europe (Stockholm)	eu-north-1	inspector-scan.eu-north-1.amazonaws.com	HTTPS
Europe (Zurich)	eu-central-2	inspector-scan.eu-central-2.amazonaws.com	HTTPS
Israel (Tel Aviv)	il-central-1	inspector-scan.il-central-1.amazonaws.com	HTTPS
Mexico (Central)	mx-central-1	inspector-scan.mx-central-1.amazonaws.com	HTTPS
Middle East (Bahrain)	me-south-1	inspector-scan.me-south-1.amazonaws.com	HTTPS

Region Name	Region	Endpoint	Protocol
Middle East (UAE)	me-central-1	inspector-scan.me-central-1.amazonaws.com	HTTPS
South America (São Paulo)	sa-east-1	inspector-scan.sa-east-1.amazonaws.com	HTTPS
AWS GovCloud (US-East)	us-gov-east-1	inspector-scan.us-gov-east-1.amazonaws.com inspector-scan-fips.us-gov-east-1.amazonaws.com	HTTPS HTTPS
AWS GovCloud (US-West)	us-gov-west-1	inspector-scan.us-gov-west-1.amazonaws.com inspector-scan-fips.us-gov-west-1.amazonaws.com	HTTPS HTTPS

Region-specific feature availability

This section describes the availability of Amazon Inspector features by AWS Region.

Agentless EC2 scanning for Amazon EC2 Regions

The following table shows the AWS Regions where agentless scanning for Amazon EC2 is currently available.

Region Name	Region code
US East (N. Virginia)	us-east-1
US East (Ohio)	us-east-2
US West (N. California)	us-west-1

Region Name	Region code
US West (Oregon)	us-west-2
Africa (Cape Town)	af-south-1
Asia Pacific (Hong Kong)	ap-east-1
Asia Pacific (Tokyo)	ap-northeast-1
Asia Pacific (Seoul)	ap-northeast-2
Asia Pacific (Osaka)	ap-northeast-3
Asia Pacific (Mumbai)	ap-south-1
Asia Pacific (Hyderabad)	ap-south-2
Asia Pacific (Singapore)	ap-southeast-1
Asia Pacific (Sydney)	ap-southeast-2
Asia Pacific (Jakarta)	ap-southeast-3
Asia Pacific (Melbourne)	ap-southeast-4
Asia Pacific (Malaysia)	ap-southeast-5
Asia Pacific (Thailand)	ap-southeast-7
Canada (Central)	ca-central-1
Canada West (Calgary)	ca-west-1
Europe (Stockholm)	eu-north-1
Europe (Frankfurt)	eu-central-1
Europe (Zurich)	eu-central-2
Europe (Ireland)	eu-west-1

Region Name	Region code
Europe (London)	eu-west-2
Europe (Paris)	eu-west-3
Europe (Milan)	eu-south-1
Europe (Spain)	eu-south-2
Israel (Tel Aviv)	il-central-1
Middle East (UAE)	me-central-1
Middle East (Bahrain)	me-south-1
Mexico (Central)	mx-central-1
South America (São Paulo)	sa-east-1
AWS GovCloud (US-East)	us-gov-east-1
AWS GovCloud (US-West)	us-gov-west-1

Lambda code scanning Regions

The following table shows the AWS Regions where Lambda code scanning is currently available.

Region Name	Region code
US East (N. Virginia)	us-east-1
US West (Oregon)	us-west-2
US East (Ohio)	us-east-2
Asia Pacific (Sydney)	ap-southeast-2
Asia Pacific (Tokyo)	ap-northeast-1
Europe (Frankfurt)	eu-central-1

Region Name	Region code
Europe (Ireland)	eu-west-1
Europe (London)	eu-west-2
Europe (Stockholm)	eu-north-1
Asia Pacific (Singapore)	ap-southeast-1

> **Important**
>
> If you try to enable Lambda code scanning with the Amazon Inspector Enable API in an AWS Region where Lambda code scanning isn't available, you receive the following access denied error:
>
> ```
> An error occurred (AccessDeniedException) when calling the Enable operation:
>  Lambda code scanning is not supported in unsupported-AWS Region
> ```

Amazon Inspector Code Security Regions

The following table shows the AWS Regions where Amazon Inspector Code Security is currently available.

Region Name	Region code
US East (N. Virginia)	us-east-1
US West (Oregon)	us-west-2
US East (Ohio)	us-east-2
Asia Pacific (Sydney)	ap-southeast-2
Asia Pacific (Tokyo)	ap-northeast-1
Europe (Frankfurt)	eu-central-1

Region Name	Region code
Europe (Ireland)	eu-west-1
Europe (London)	eu-west-2
Europe (Stockholm)	eu-north-1
Asia Pacific (Singapore)	ap-southeast-1

AWS GovCloud (US) Regions

For the latest information, see Amazon Inspector in the *AWS GovCloud (US) User Guide*.

Document history

The following table describes important changes in each release of the *Amazon Inspector User Guide*, beginning in November 2021. To receive notifications about documentation updates, you can subscribe to an RSS feed.

Change	Description	Date
New policy	Amazon Inspector adds a new managed policy that provides full access to Amazon Inspector and access to other related services. For more information, see AWS managed policies for Amazon Inspector.	July 3, 2025
Updated functionality	Amazon Inspector is now available in new AWS Regions. For more information, see Regions and endpoints.	July 1, 2025
Updated functionality	Amazon Inspector updates its retention period for closed findings. Amazon Inspector removes findings after 3 days if associated resources are deleted, terminated, or no longer eligble for scanning. For more information, see Understanding Amazon Inspector findings.	June 25, 2025
Updated functionality	Amazon Inspector updates its supported operating systems for Amazon EC2 scanning and Amazon ECR scanning.	June 18, 2025

	Amazon EC2 scanning now supports Fedora version 42 and Ubuntu version 25.04. Amazon ECR scanning now supports Alpine version 3.22, Fedora version 42, and Ubuntu version 25.04. For more information, see Supported operating systems and programming languages for Amazon Inspector.	
New feature	Amazon Inspector now scans first-party application source code, third-party application dependencies, and Infrastructure as Code for vulnerabilities. For more information, see Amazon Inspector Code Security.	June 17, 2025
Update for plugin	Amazon Inspector is made aware of a scenario where the Amazon Inspector SSM plugin might generate a vulnerability finding for `CVE-2025-0913` and `CVE-2025-4673`. It was confirmed the Amazon Inspector SSM plugin is not impacted by these CVEs, and an update was deployed to resolve this detection.	June 13, 2025

New feature	Amazon Inspector can now show actively used container images and when container images were last used on a cluster. For more information, see Mapping container images to running containers.	May 16, 2025
Updates to supported operating systems	Amazon Inspector add support for BusyBox For more information, see Supported operating systems and programming languages for Amazon Inspector.	May 13, 2025
Updated policy	Amazon Inspector adds a new permission to the service-l inked role named `AmazonInspector2ServiceRolePolicy`. This permissio n allows you to describe IP addresses and internet gateways. For more informati on, see AWS managed policies for Amazon Inspector.	April 29, 2025
Update for plugin	Amazon Inspector is made aware of a scenario where the Amazon Inspector SSM plugin might generate a vulnerabi lity finding for `CVE-2025-22871`. It was confirmed the Amazon Inspector SSM plugin is not impacted by these CVEs, and an update was deployed to resolve this detection.	April 21, 2025

Update for plugin	Amazon Inspector is made aware of a scenario where the Amazon Inspector SSM plugin might generate a vulnerability finding for `CVE-2020-8911` ,`CVE-2020-8912` , and `CVE-2024-45337` . It was confirmed that Amazon Inspector is not impacted by these CVEs and an update was deployed to resolve this detection.	April 18, 2025
Updates to Amazon Inspector SBOM Generator chapter	Amazon Inspector updates Amazon Inspector SBOM Generator version. For more information, see Previous versions of the Amazon Inspector SBOM Generator.	April 16, 2025
Updates to Amazon Inspector SBOM Generator chapter	Amazon Inspector adds new topic to Amazon Inspector SBOM Generator chapter. This topic describes how the Sbomgen tracks license information in a software bill of materials. For more information, see Amazon Inspector SBOM Generator license collection.	April 16, 2025

Updates to managed policies	Amazon Inspector adds permissions that allow read-only access to Amazon ECS and Amazon EKS actions. For more information, see Service-linked role permissions for Amazon Inspector.	March 25, 2025
Updates to supported operating systems	Amazon Inspector no longer supports SUSE Linux Enterprise Server 12.5 as part of scanning for Amazon EC2 and Amazon ECR. For more information, see Supported operating systems and programming languages for Amazon Inspector.	March 21, 2025
Updates to supported operating systems	Amazon Inspector adds support for Chainguard and Wolfi to Amazon ECR scanning. For more information, see Supported operating systems and programming languages for Amazon Inspector.	March 21, 2025
Updates to table of contents	Amazon Inspector adds chapter about tagging Amazon Inspector resources. For more information, see Tagging Amazon Inspector resources.	February 25, 2025

Updates to table of contents	Amazon Inspector adds new topic to Amazon Inspector SBOM Generator chapter. For more information, see Amazon Inspector SBOM Generator comprehensive operating system collection.	January 28, 2025
Updated functionality	Amazon Inspector adds nodejs202.x and python3.13 to its list of supported runtimes for Lambda standard scanning. For more information, see Supported operating systems and programming languages for Amazon Inspector.	January 24, 2025
Updated functionality	Amazon Inspector removes Oracle Linux (Oracle) 7 and SUSE Linux Enterprise Server (SLES) 15.5 from its list of supported operating systems for Amazon EC2 and Amazon ECR. For more information, see Supported operating systems and programming languages for Amazon Inspector.	December 31, 2024

Updated functionality	Amazon Inspector adds Ubuntu 24.10 to its list of supported operating systems for Amazon EC2 and Amazon ECR. For more information, see Supported operating systems and programming languages for Amazon Inspector.	December 12, 2024
Updates to table of contents	Amazon Inspector adds new topics to the Amazon Inspector SBOM Generator chapter. For more information, see Amazon Inspector SBOM Generator.	December 9, 2024
Updated functionality	Amazon Inspector updates the `amazon:inspector:sbom_generator` table to add and remove namespaces. For more information, see Using CycloneDX namespaces with Amazon Inspector.	December 9, 2024
Updated functionality	Amazon Inspector updates its CI/CD integration feature to support scan actions with CodePipeline. For more information, see Using Amazon Inspector Scan actions with CodePipeline.	November 26, 2024

Updates to table of contents	Amazon Inspector reorganizes the table of contents to include a chapter for the Amazon Inspector SBOM Generator. For more information, see Amazon Inspector SBOM Generator.	November 22, 2024
Updated functionality	Amazon Inspector removes Fedora 39 from its list of supported operating systems for Amazon EC2 and Amazon ECR. For more information, see Supported operating systems and programming languages for Amazon Inspector.	November 22, 2024
Updated functionality	Amazon Inspector removes Alpine 3.17 from its list of supported operating systems for Amazon ECR. For more information, see Supported operating systems and programming languages for Amazon Inspector.	November 22, 2024
Updated functionality	Amazon Inspector adds Sbomgen versions to Previous versions of the Amazon Inspector SBOM Generator.	November 19, 2024

Updated functionality	Amazon Inspector adds AL2 as a supported runtime. For more information, see Supported operating systems and programming languages for Amazon Inspector.	August 26, 2024
Updated functionality	Amazon Inspector added a new statement to the AmazonInspector2ServiceRolePolicy policy. The new statement allows Amazon Inspector to return function tags in AWS Lambda.	July 31, 2024
Updated functionality	Amazon Inspector releases new security controls. For more information, see Amazon Inspector controls in the *AWS Security Hub User Guide*.	July 11, 2024
Updated functionality	The Amazon Inspector SBOM Generator now scans Dockerfiles and Docker container images for misconfigurations that can introduce security vulnerabilities. For more information, see Amazon Inspector Dockerfile checks.	June 10, 2024

Updated functionality	Amazon Inspector updates its CI/CD integration feature to support CodeCatalyst actions, so you can add Amazon Inspector vulnerability scans to your CodeCatalyst workflows. For more information, see Using CodeCatalyst actions.	June 7, 2024
Updated functionality	Amazon Inspector includes an option to download a CSV file of CIS scan results. For more information, see Viewing and downloading CIS scan results in Center for Internet Security (CIS) scans for Amazon EC2 instances.	May 3, 2024
Updated functionality	Amazon Inspector updates its CI/CD integration feature to support GitHub Actions, so you can add Amazon Inspector vulnerability scans to your GitHub workflows . For more information, see Using Amazon Inspector with GitHub Actions.	April 29, 2024

Updated functionality	Amazon Inspector updates the managed policy `AmazonInspector2FullAccess`, so it creates the service-linked role `AWSServiceRoleForAmazonInspector2Agentless`. This allows users to perform agent-based scanning and agentless scanning when they enable Amazon Inspector.	April 24, 2024
Updated functionality	Amazon Inspector updates retention period for closed findings from 30 days to 7 days. For more information, see Understanding findings in Amazon Inspector.	February 12, 2024
Updated functionality	Amazon Inspector added a new statement to the AmazonInspector2ServiceRolePolicy policy. The new statement allows Amazon Inspector to start CIS scans for your instance.	January 23, 2024
New Policy	Amazon Inspector has added a new policy, AmazonInspector2ManagedCisPolicy policy, that you can use as part of in an instance profile to allow CIS scans on an instance.	January 23, 2024

New Feature	Amazon Inspector will now refresh the **ECR re-scan duration** of container images when you pull them. To change your re-scan duration based on push or pull dates see Configuring the ECR re-scan duration.	January 23, 2024
New Feature	Amazon Inspector can now run Center for Internet Security (CIS) scans on EC2 instances. For more informati on, see Amazon Inspector CIS scans.	January 23, 2024
New Feature	Amazon Inspector can now scan container images in your CI/CD pipelines. For more information, see CI/CD integration with Amazon Inspector.	November 30, 2023
New Policy	Amazon Inspector has added a new policy that allows Amazon Inspector to scan Amazon EBS snapshots from your EC2 instance for agentless scanning. For more information on the policy, see Agentless scanning.	November 27, 2023

New Feature	Amazon Inspector now supports scanning supported Linux Amazon EC2 instances without SSM agents through agentless scanning. For more information see Agentless scanning.	November 27, 2023
New supported resources	Amazon Inspector now supports scanning of MacOS Amazon EC2 instances. See Supported operating systems: Amazon EC2 scanning for supported MacOS versions.	October 5, 2023
New Regions	Amazon Inspector is now available in Asia Pacific (Jakarta), Africa (Cape Town), Asia Pacific (Osaka), and Europe (Zurich).	September 29, 2023
New feature	You can now exclude EC2 instances from Amazon Inspector scans using exclusion tags.	September 14, 2023
New feature	Amazon Inspector has added new permissions that allow Amazon Inspector to scan network configurations of Amazon EC2 instances that are part of Elastic Load Balancing target groups.	August 31, 2023

New feature	Amazon Inspector now provides vulnerability intelligence details for package vulnerability findings.	July 31, 2023
Updated functionality	Amazon Inspector has added new permissions that allow read-only users to export Software Bill of Materials (SBOM) for their resources.	June 29, 2023
New feature	You can now export SBOM for resources being scanned by Amazon Inspector.	June 13, 2023
New feature	Lambda code scanning is now generally available . New features have been added that allow you to encrypt code identified in your Lambda code scanning findings. Additionally Lambda code scanning now provides suggested remediation rewrites of your code.	June 13, 2023
Updated functionality	Amazon Inspector added a new statement to the AmazonInspector2ReadOnlyAccess policy. The new statements allows read-only users to retrieve details of Lambda code scanning status and findings for their account.	May 2, 2023

New feature	Amazon Inspector has added Vulnerability database search which allows you to check if Amazon Inspector covers a specific CVE.	May 1, 2023
Updated functionality	Amazon Inspector has added new permissions to the AmazonInspector2ServiceRolePolicy policy that allow Amazon Inspector to create AWS CloudTrail service-linked channels in your account when you activate Lambda scanning. This allows Amazon Inspector to monitor CloudTrail events in your account.	April 30, 2023
Updated functionality	Amazon Inspector added a new statement to the AmazonInspector2FullAccess policy. The new statement allows users to retrieve details of code vulnerability findings from Lambda code scanning.	April 17, 2023

Updated functionality	Amazon Inspector added a new statement to the AmazonInspector2ServiceRolePolicy policy. The new statement allows Amazon Inspector to send information to Amazon EC2 Systems Manager about the custom paths you have defined for Amazon EC2 deep inspection.	April 17, 2023
New feature	Amazon Inspector adds additional support for Linux EC2 instances in the form of Amazon Inspector deep inspection, which scans your instances for package vulnerabilities in application programming language packages.	April 17, 2023

Updated functionality	Amazon Inspector added a new statement to the AmazonInspector2ServiceRolePolicy policy. The new statements allows Amazon Inspector to request scans of the developer code in AWS Lambda functions , and receive scan data from Amazon CodeGuru Security. Additionally Amazon Inspector has added permissions to review IAM policies. Amazon Inspector uses this information to scan Lambda functions for code vulnerabilities.	February 28, 2023
New feature	Amazon Inspector adds additional support for Lambda functions in the form of Lambda code scanning, which scan the developer code of your Lambda functions for security vulnerabilities.	February 28, 2023

Updated functionality	Amazon Inspector added a new statement to the AmazonInspector2ServiceRolePolicy policy. The new statement allows Amazon Inspector to retrieve information from CloudWatch about when an AWS Lambda function was last invoked. uses this information to focus scans on the Lambda functions in your environment that have been active in the last 90 days.	February 20, 2023
Updated functionality	Amazon Inspector added a new statement to the AmazonInspector2ServiceRolePolicy policy. The new statement allows Amazon Inspector to retrieve information about your AWS Lambda functions. Amazon Inspector uses this information to scan your Lambda functions for security vulnerabilities.	November 28, 2022
New feature	Amazon Inspector adds support for Scanning AWS Lambda functions.	November 28, 2022

Updated content	Added procedures, policy examples, and tips for exporting findings reports from Amazon Inspector to an Amazon Simple Storage Service (Amazon S3) bucket.	October 14, 2022
New content	Added information about assessing Amazon Inspector coverage of your AWS environment by using the Amazon Inspector console. The information includes descriptions of **Status** values for individual resources in your environment.	October 7, 2022
New feature	Amazon Inspector now provides additional details about how to remediate package vulnerabilities. New fields have been added to finding details. The new fields provide context about whether a fix is available through a package update. If a fix is available, the **Suggested remediation** section of a finding shows the commands that you can run to make the fix.	September 2, 2022

Updated functionality	Amazon Inspector added a new action to the AmazonInspector2ServiceRolePolicy policy. The new action allows Amazon Inspector to describe SSM association executions. Amazon Inspector also added additional resource scoping to allow Amazon Inspector to create, update, delete, and start SSM associations with `AmazonInspector2` owned SSM documents.	August 31, 2022
New feature	Amazon Inspector now supports scans for Windows instances. Amazon Inspector can now scan SSM managed instances running supported Windows operating systems. Scans of Windows hosts are performed by the Amazon Inspector SSM plugin, which is installed and invoked through new SSM associations automatically created by Amazon Inspector.	August 31, 2022
Updated functionality	Amazon Inspector updated the resource scoping of the AmazonInspector2ServiceRolePolicy policy to allow Amazon Inspector to collect software inventory in other AWS partitions.	August 12, 2022

Updated functionality	In the AmazonInspector2ServiceRolePolicy policy, Amazon Inspector restructured the resource scoping of the actions allowing Amazon Inspector to create, delete, and update SSM associations.	August 10, 2022
New feature	Amazon Inspector now supports changing your ECR automated re-scan duration setting. The Amazon ECR automated re-scan duration setting determines how long Amazon Inspector continuously monitors images pushed into repositories. When an image is older than the scan duration, Amazon Inspector will no longer scan the image and close all existing findings for it. All new accounts will automatically have their ECR automated re-scan duration set to lifetime. Previously created accounts had an ECR automated re-scan duration of 30 days, but you can now choose from 30-day, 180-day, or lifetime durations for scans.	June 25, 2022

New functionality	Amazon Inspector added a new AWS managed policy, the AmazonInspector2ReadOnlyAccess policy, to allow read-only access to Amazon Inspector functionality.	January 21, 2022
General availability	This is the initial public release of the *Amazon Inspector User Guide*.	November 29, 2021

AWS Glossary

For the latest AWS terminology, see the AWS glossary in the *AWS Glossary Reference*.