AWS Config

Developer Guide

AWS Config: Developer Guide

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What Is AWS Config?

AWS Config provides a detailed view of the configuration of AWS resources in your AWS account. This includes how the resources are related to one another and how they were configured in the past so that you can see how the configurations and relationships change over time.

An AWS *resource* is an entity you can work with in AWS, such as an Amazon Elastic Compute Cloud (EC2) instance, an Amazon Elastic Block Store (EBS) volume, a security group, or an Amazon Virtual Private Cloud (VPC), for example. For a complete list of AWS resources supported by AWS Config, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9).

With AWS Config, you can do the following:

- Evaluate your AWS resource configurations for desired settings.
- Get a snapshot of the current configurations of the supported resources that are associated with your AWS account.
- Retrieve configurations of one or more resources that exist in your account.
- Retrieve historical configurations of one or more resources.
- Receive a notification whenever a resource is created, modified, or deleted.
- View relationships between resources. For example, you might want to find all resources that use a particular security group.

Ways to Use AWS Config

When you run your applications on AWS, you usually use AWS resources, which you must create and manage collectively. As the demand for your application keeps growing, so does your need to keep track of your AWS resources. AWS Config is designed to help you oversee your application resources in the following scenarios:

Resource Administration

To exercise better governance over your resource configurations and to detect resource misconfigurations, you need fine-grained visibility into what resources exist and how these resources are configured at any time. You can use AWS Config to notify you whenever resources are created, modified, or deleted without having to monitor these changes by polling the calls made to each resource.

You can use AWS Config rules to evaluate the configuration settings of your AWS resources. When AWS Config detects that a resource violates the conditions in one of your rules, AWS Config flags the resource as noncompliant and sends a notification. AWS Config continuously evaluates your resources as they are created, changed, or deleted.

Auditing and Compliance

You might be working with data that requires frequent audits to ensure compliance with internal policies and best practices. To demonstrate compliance, you need access to the historical configurations of your resources. This information is provided by AWS Config.

Managing and Troubleshooting Configuration Changes

When you use multiple AWS resources that depend on one another, a change in the configuration of one resource might have unintended consequences on related resources. With AWS Config, you can view how the resource you intend to modify is related to other resources and assess the impact of your change.

You can also use the historical configurations of your resources provided by AWS Config to troubleshoot issues and to access the last known good configuration of a problem resource.

Security Analysis

To analyze potential security weaknesses, you need detailed historical information about your AWS resource configurations, such as the AWS Identity and Access Management (IAM) permissions that are granted to your users, or the Amazon EC2 security group rules that control access to your resources.

You can use AWS Config to view the IAM policy that was assigned to an IAM user, group, or role at any time in which AWS Config was recording. This information can help you determine the permissions that belonged to a user at a specific time: for example, you can view whether the user `John Doe` had permission to modify Amazon VPC settings on Jan 1, 2015.

You can also use AWS Config to view the configuration of your EC2 security groups, including the port rules that were open at a specific time. This information can help you determine whether a security group blocked incoming TCP traffic to a specific port.

AWS Config Concepts

AWS Config provides a detailed view of the resources associated with your AWS account, including how they are configured, how they are related to one another, and how the configurations and their relationships have changed over time. Let's take a closer look at the concepts of AWS Config.

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AWS Config

Understanding the basic components of AWS Config will help you track resource inventory and changes and evaluate configurations of your AWS resources.

AWS Resources

AWS resources are entities that you create and manage using the AWS Management Console, the AWS Command Line Interface (CLI), the AWS SDKs, or AWS partner tools. Examples of AWS resources include Amazon EC2 instances, security groups, Amazon VPCs, and Amazon Elastic Block Store. AWS Config refers to each resource using its unique identifier, such as the resource ID or an Amazon Resource Name (ARN). For details, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9).

Configuration History

A configuration history is a collection of the configuration items for a given resource over any time period. A configuration history can help you answer questions about, for example, when the resource was first created, how the resource has been configured over the last month, and what configuration changes were introduced yesterday at 9 AM. The configuration history is available to you in multiple formats. AWS Config automatically delivers a configuration history file for each resource type that is being recorded to an Amazon S3 bucket that you specify. You can select a given resource in the AWS Config console and navigate to all previous configuration items for that resource using the timeline. Additionally, you can access the historical configuration items for a resource from the API.

Configuration Items

A *configuration item* represents a point-in-time view of the various attributes of a supported AWS resource that exists in your account. The components of a configuration item include metadata, attributes, relationships, current configuration, and related events. AWS Config creates a configuration item whenever it detects a change to a resource type that it is recording. For example, if AWS Config is recording Amazon S3 buckets, AWS Config creates a configuration item whenever a bucket is created, updated, or deleted.

For more information, see Components of a Configuration Item (p. 30).

Configuration Recorder

The configuration recorder stores the configurations of the supported resources in your account as configuration items. You must first create and then start the configuration recorder before you can start recording. You can stop and restart the configuration recorder at any time. For more information, see Managing the Configuration Recorder (p. 50).

By default, the configuration recorder records all supported resources in the region where AWS Config is running. You can create a customized configuration recorder that records only the resource types that you specify. For more information, see Selecting Which Resources AWS Config Records (p. 52).

If you use the AWS Management Console or the CLI to turn on the service, AWS Config automatically creates and starts a configuration recorder for you.

Configuration Snapshot

A configuration snapshot is a collection of the configuration items for the supported resources that exist in your account. This configuration snapshot is a complete picture of the resources that are being recorded and their configurations. The configuration snapshot can be a useful tool for validating your configuration. For example, you may want to examine the configuration snapshot regularly for resources that are configured incorrectly or that potentially should not exist. The configuration snapshot is available in multiple formats. You can have the configuration snapshot delivered to an Amazon Simple Storage Service (Amazon S3) bucket that you specify. Additionally, you can select a point in time in the AWS Config console and navigate through the snapshot of configuration items using the relationships between the resources.

Configuration Stream

A configuration stream is an automatically updated list of all configuration items for the resources that AWS Config is recording. Every time a resource is created, modified, or deleted, AWS Config creates a configuration item and adds to the configuration stream. The configuration stream works by using an Amazon Simple Notification Service (Amazon SNS) topic of your choice. The configuration stream is helpful for observing configuration changes as they occur so that you can spot potential problems, generating notifications if certain resources are changed, or updating external systems that need to reflect the configuration of your AWS resources.

Resource Relationship

AWS Config discovers AWS resources in your account and then creates a map of relationships between AWS resources. For example, a relationship might include an Amazon EBS volume `vol-123ab45d` attached to an Amazon EC2 instance `i-a1b2c3d4` that is associated with security group `sg-ef678hk`.

For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9).

AWS Config Managed and Custom Rules

An AWS Config rule represents your desired configuration settings for specific AWS resources or for an entire AWS account. AWS Config provides customizable, predefined rules to help you get started. If a resource violates a rule, AWS Config flags the resource and the rule as noncompliant, and AWS Config notifies you through Amazon SNS.

AWS Config Custom Rules

With AWS Config you can also create custom rules. While AWS Config continuously tracks your resource configuration changes, it checks whether these changes violate any of the conditions in your rules.

After you activate a rule, AWS Config compares your resources to the conditions of the rule. After this initial evaluation, AWS Config continues to run evaluations each time one is triggered. The evaluation triggers are defined as part of the rule, and they can include the following types:

- Configuration changes – AWS Config triggers the evaluation when any resource that matches the rule's scope changes in configuration. The evaluation runs after AWS Config sends a configuration item change notification.
- Periodic – AWS Config runs evaluations for the rule at a frequency that you choose (for example, every 24 hours).

For more information, see Evaluating Resources with Rules (p. 93).

Multi-Account Multi-Region Data Aggregation

Multi-account multi-region data aggregation in AWS Config allows you to aggregate AWS Config data from multiple accounts and regions into a single account. Multi-account multi-region data aggregation is useful for central IT administrators to monitor compliance for multiple AWS accounts in the enterprise.

Source Account

A source account is the AWS account from which you want to aggregate AWS Config resource configuration and compliance data. A source account can be an individual account or an organization in AWS Organizations. You can provide source accounts individually or you can retrieve them through AWS Organizations.

Source Region

A source region is the AWS region from which you want to aggregate AWS Config data.

Aggregator

An aggregator is a new resource type in AWS Config that collects AWS Config data from multiple source accounts and regions. Create an aggregator in the region where you want to see the aggregated AWS Config data.

Aggregator Account

An aggregator account is an account where you create an aggregator.

Authorization

As a source account owner, authorization refers to the permissions you grant to an aggregator account and region to collect your AWS Config data. Authorization is not required if you are aggregating source accounts that are part of AWS Organizations.

For more information, see topics in Multi-Account Multi-Region Data Aggregation (p. 166) section.

Managing AWS Config

AWS Config Console

You can use and manage the AWS Config service with the AWS AWS Config console. The console provides a user interface for performing many AWS Config tasks such as:

- Specifying the types of AWS resources for recording.
- Configuring resources to record, including:
  - Selecting an Amazon S3 bucket.
  - Selecting an Amazon SNS topic.
  - Creating AWS Config role.
- Creating managed rules and custom rules that represent desired configuration settings for specific AWS resources or for an entire AWS account.
- Creating and managing configuration aggregators to aggregate data across multiple accounts and regions.
- Viewing a snapshot of current configurations of the supported resources.
- Viewing relationships between AWS resources.

For more information about the AWS Management Console, see AWS Management Console.

AWS Config CLI

The AWS Command Line Interface is a unified tool that you can use to interact with AWS Config from the command line. For more information, see the AWS Command Line Interface User Guide. For a complete list of AWS Config CLI commands, see Available Commands.

AWS Config APIs

In addition to the console and the CLI, you can also use the AWS Config RESTful APIs to program AWS Config directly. For more information, see the AWS Config API Reference.

AWS SDKs

As an alternative to using the AWS Config API, you can use one of the AWS SDKs. Each SDK consists of libraries and sample code for various programming languages and platforms. The SDKs provide a convenient way to create programmatic access to AWS Config. For example, you can use the SDKs to sign requests cryptographically, manage errors, and retry requests automatically. For more information, see the Tools for Amazon Web Services page.

Control Access to AWS Config

AWS Identity and Access Management is a web service that enables Amazon Web Services (AWS) customers to manage users and user permissions. Use IAM to create individual users for anyone who needs access to AWS Config. Create an IAM user for yourself, give that IAM user administrative privileges, and use that IAM user for all of your work. By creating individual IAM users for people accessing your account, you can give each IAM user a unique set of security credentials. You can also grant different permissions to each IAM user. If necessary, you can change or revoke an IAM user's permissions at any time. For more information, see Controlling Permissions for AWS Config (p. 77).

Partner Solutions

AWS partners with third-party specialists in logging and analysis to provide solutions that use AWS Config output. For more information, visit the AWS Config detail page at AWS AWS Config.

How AWS Config Works

When you turn on AWS Config, it first discovers the supported AWS resources that exist in your account and generates a configuration item (p. 3) for each resource.

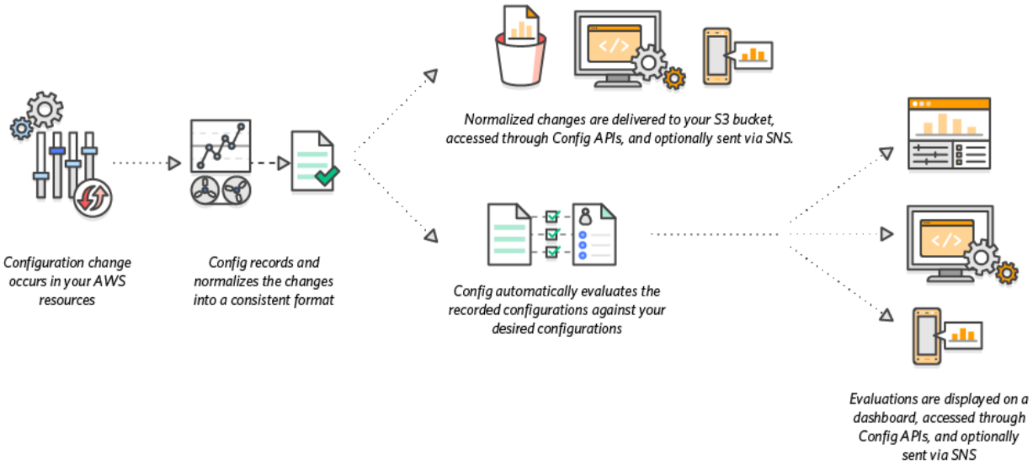
AWS Config also generates configuration items when the configuration of a resource changes, and it maintains historical records of the configuration items of your resources from the time you start the configuration recorder. By default, AWS Config creates configuration items for every supported resource in the region. If you don't want AWS Config to create configuration items for all supported resources, you can specify the resource types that you want it to track.

AWS Config keeps track of all changes to your resources by invoking the Describe or the List API call for each resource in your account. The service uses those same API calls to capture configuration details for all related resources.

For example, removing an egress rule from a VPC security group causes AWS Config to invoke a Describe API call on the security group. AWS Config then invokes a Describe API call on all of the instances associated with the security group. The updated configurations of the security group (the resource) and of each instance (the related resources) are recorded as configuration items and delivered in a configuration stream to an Amazon Simple Storage Service (Amazon S3) bucket.

AWS Config also tracks the configuration changes that were not initiated by the API. AWS Config examines the resource configurations periodically and generates configuration items for the configurations that have changed.

If you are using AWS Config rules, AWS Config continuously evaluates your AWS resource configurations for desired settings. Depending on the rule, AWS Config will evaluate your resources either in response to configuration changes or periodically. Each rule is associated with an AWS Lambda function, which contains the evaluation logic for the rule. When AWS Config evaluates your resources, it invokes the rule's AWS Lambda function. The function returns the compliance status of the evaluated resources. If a resource violates the conditions of a rule, AWS Config flags the resource and the rule as noncompliant. When the compliance status of a resource changes, AWS Config sends a notification to your Amazon SNS topic.


Configuration change occurs in your AWS resources
Config records and normalizes the changes into a consistent format
Normalized changes are delivered to your S3 bucket, accessed through Config APIs, and optionally sent via SNS.
Config automatically evaluates the recorded configurations against your desired configurations
Evaluations are displayed on a dashboard, accessed through Config APIs, and optionally sent via SNS

Deliver Configuration Items

AWS Config can deliver configuration items through one of the following channels:

Amazon S3 Bucket

AWS Config tracks changes in the configuration of your AWS resources, and it regularly sends updated configuration details to an Amazon S3 bucket that you specify. For each resource type that AWS Config records, it sends a *configuration history file* every six hours. Each configuration history file contains details about the resources that changed in that six-hour period. Each file includes resources of one type, such as Amazon EC2 instances or Amazon EBS volumes. If no configuration changes occur, AWS Config does not send a file.

AWS Config sends a *configuration snapshot* to your Amazon S3 bucket when you use the deliver-config-snapshot command with the AWS CLI, or when you use the DeliverConfigSnapshot action with the AWS Config API. A configuration snapshot contains configuration details for all resources that AWS Config records in your AWS account. The configuration history file and configuration snapshot are in JSON format.

> **Note**
> AWS Config only delivers the configuration history files and configuration snapshots to the specified S3 bucket; AWS Config doesn't modify the lifecycle policies for objects in the S3 bucket. You can use lifecycle policies to specify whether you want to delete or archive objects to Amazon Glacier. For more information, see Managing Lifecycle Configuration in the *Amazon Simple Storage Service Console User Guide*. You can also see the Archiving Amazon S3 Data to Amazon Glacier blog post.

Amazon SNS Topic

An Amazon Simple Notification Service (Amazon SNS) topic is a communication channel that Amazon SNS uses to deliver messages (or *notifications*) to subscribing endpoints such as an email address or clients such as an Amazon Simple Queue Service queue. Other types of Amazon SNS notifications include push notification messages to apps on mobile phones, Short Message Service (SMS) notifications to SMS-enabled mobile phones and smart phones, and HTTP POST requests. For best results, use Amazon SQS as the notification endpoint for the SNS topic and then process the information in the notification programmatically.

AWS Config uses the Amazon SNS topic that you specify to send you notifications. The type of notification that you are receiving is indicated by the value for the `messageType` key in the message body, as in the following example:

```
"messageType": "ConfigurationHistoryDeliveryCompleted"
```

The notifications can be any of the following message types:

`ComplianceChangeNotification`

> The compliance type of a resource that AWS Config evaluates has changed. The compliance type indicates whether the resource complies with a specific AWS Config rule, and it is represented by the `ComplianceType` key in the message. The message includes `newEvaluationResult` and `oldEvaluationResult` objects for comparison.

`ConfigRulesEvaluationStarted`

> AWS Config started evaluating your rule against the specified resources.

`ConfigurationSnapshotDeliveryStarted`

> AWS Config started delivering the configuration snapshot to your Amazon S3 bucket. The name of the Amazon S3 bucket is provided for the `s3Bucket` key in the message.

`ConfigurationSnapshotDeliveryCompleted`

> AWS Config successfully delivered the configuration snapshot to your Amazon S3 bucket.

`ConfigurationSnapshotDeliveryFailed`

> AWS Config failed to deliver the configuration snapshot to your Amazon S3 bucket.

`ConfigurationHistoryDeliveryCompleted`

> AWS Config successfully delivered the configuration history to your Amazon S3 bucket.

`ConfigurationItemChangeNotification`

> A resource has been created, deleted, or changed in configuration. This message includes the details of the configuration item that AWS Config creates for this change, and it includes the type of change. These notifications are delivered within minutes of a change and are collectively known as the *configuration stream*.

`OversizedConfigurationItemChangeNotification`

> This message type is delivered when a configuration item change notification exceeded the maximum size allowed by Amazon SNS. The message includes a summary of the configuration item. You can view the complete notification in the specified Amazon S3 bucket location.

`OversizedConfigurationItemChangeDeliveryFailed`

> AWS Config failed to deliver the oversized configuration item change notification to your Amazon S3 bucket.

For example notifications, see Notifications that AWS Config Sends to an Amazon SNS topic (p. 62).

For more information about Amazon SNS, see the Amazon Simple Notification Service Developer Guide.

AWS Config Supported AWS Resource Types and Resource Relationships

AWS Config supports the following AWS resources types and resource relationships.

Amazon CloudFront

AWS Service	Resource Type Value	Relationship	Related Resource
Amazon CloudFront *	AWS::CloudFront::Distribution	is associated with	AWS WAF WebACL
			ACM Certificate
			S3 Bucket
			IAM Server Certificate
	AWS::CloudFront::StreamingDistribution	is associated with	AWS WAF WebACL
			ACM Certificate
			S3 Bucket
			IAM Server Certificate

*AWS Config support for Amazon CloudFront is available only in the US East (N. Virginia) region.

Amazon CloudWatch

AWS Service	Resource Type Value	Relationship	Related Resource
Amazon CloudWatch	AWS::CloudWatch::Alarm	NA	NA

Amazon DynamoDB

AWS Service	Resource Type Value	Relationship	Related Resource
Amazon DynamoDB	AWS::DynamoDB::Table	NA	NA

Amazon Elastic Compute Cloud

AWS Service	Resource Type Value	Relationship	Related Resource
Amazon Elastic Compute Cloud	AWS::EC2::Host *	contains	EC2 instance

AWS Service	Resource Type Value	Relationship	Related Resource
	`AWS::EC2::EIP`	is attached to	EC2 instance
			Network interface
	`AWS::EC2::Instance`	contains	EC2 network interface
		is associated with	EC2 security group
		is attached to	Amazon EBS volume
			EC2 Elastic IP (EIP)
		is contained in	EC2 Dedicated host
			Route table
			Subnet
			Virtual private cloud (VPC)
	`AWS::EC2::NetworkInterface`	is associated with	EC2 security group
		is attached to	EC2 Elastic IP (EIP)
			EC2 instance
		is contained in	Route table
			Subnet
			Virtual private cloud (VPC)
	`AWS::EC2::SecurityGroup`	is associated with	EC2 instance
			EC2 network interface
			Virtual private cloud (VPC)

*AWS Config records the configuration details of Dedicated hosts and the instances that you launch on them. As a result, you can use AWS Config as a data source when you report compliance with your server-bound software licenses. For example, you can view the configuration history of an instance and determine which Amazon Machine Image (AMI) it is based on. Then, you can look up the configuration history of the host, which includes details such as the numbers of sockets and cores, to verify that the host complies with the license requirements of the AMI. For more information, see Tracking Configuration Changes with AWS Config in the *Amazon EC2 User Guide for Linux Instances*.

Amazon Elastic Block Store

AWS Service	Resource Type Value	Relationship	Related Resource
Amazon Elastic Block Store	`AWS::EC2::Volume`	is attached to	EC2 instance

Amazon Redshift

AWS Service	Resource Type Value	Relationship	Related Resource
Amazon Redshift	`AWS::Redshift::Cluster`	is associated with	Cluster parameter group
			Cluster security group
			Cluster subnet group
			Security group
			Virtual private cloud (VPC)
	`AWS::Redshift::ClusterParameterGroup`	NA	NA
	`AWS::Redshift::ClusterSecurityGroup`	NA	NA
	`AWS::Redshift::ClusterSnapshot`	is associated with	Cluster
			Virtual private cloud (VPC)
	`AWS::Redshift::ClusterSubnetGroup`	is associated with	Subnet
			Virtual private cloud (VPC)
	`AWS::Redshift::EventSubscription`	NA	NA

Amazon Relational Database Service

AWS Service	Resource Type Value	Relationship	Related Resource
Amazon Relational Database Service	`AWS::RDS::DBInstance`	is associated with	EC2 security group
			RDS DB security group
			RDS DB subnet group
	`AWS::RDS::DBSecurityGroup`	is associated with	EC2 security group
			Virtual private cloud (VPC)
	`AWS::RDS::DBSnapshot`	is associated with	Virtual private cloud (VPC)
	`AWS::RDS::DBSubnetGroup`	is associated with	EC2 security group
			Virtual private cloud (VPC)
	`AWS::RDS::EventSubscription`	NA	NA

Amazon Simple Storage Service

AWS Service	Resource Type Value	Relationship	Related Resource
Amazon Simple Storage Service	`AWS::S3::Bucket`*	NA	NA

*If you configured AWS Config to record your S3 buckets, and are not receiving configuration change notifications, verify your S3 bucket policies have the required permissions. For more information, see Troubleshooting for recording S3 buckets (p. 88).

Amazon S3 Bucket Attributes

AWS Config also records the following attributes for the Amazon S3 bucket resource type.

Attributes	Description
AccelerateConfiguration	Transfer acceleration for data over long distances between your client and a bucket.
BucketAcl	Access control list used to manage access to buckets and objects.
BucketPolicy	Policy that defines the permissions to the bucket.
CrossOriginConfiguration	Allow cross-origin requests to the bucket.
LifecycleConfiguration	Rules that define the lifecycle for objects in your bucket.
LoggingConfiguration	Logging used to track requests for access to the bucket.
NotificationConfiguration	Event notifications used to send alerts or trigger workflows for specified bucket events.
ReplicationConfiguration	Automatic, asynchronous copying of objects across buckets in different AWS Regions.
RequestPaymentConfiguration	Requester pays is enabled.
TaggingConfiguration	Tags added to the bucket to categorize. You can also use tagging to track billing.
WebsiteConfiguration	Static website hosting is enabled for the bucket.
VersioningConfiguration	Versioning is enabled for objects in the bucket.

For more information about the attributes, see Bucket Configuration Options in the *Amazon Simple Storage Service Developer Guide*.

Amazon Virtual Private Cloud

AWS Service	Resource Type Value	Relationship	Related Resource
Amazon Virtual Private Cloud	`AWS::EC2::CustomerGateway`	is attached to	VPN connection

AWS Service	Resource Type Value	Relationship	Related Resource
	`AWS::EC2::InternetGateway`	is attached to	Virtual private cloud (VPC)
	`AWS::EC2::NetworkAcl`	NA	NA
	`AWS::EC2::RouteTable`	contains	EC2 instance
			EC2 network interface
			Subnet
			VPN gateway
		is contained in	Virtual private cloud (VPC)
	`AWS::EC2::Subnet`	contains	EC2 instance
			EC2 network interface
		is attached to	Network ACL
		is contained in	Route table
			Virtual private cloud (VPC)
	`AWS::EC2::VPC`	contains	EC2 instance
			EC2 network interface
			Network ACL
			Route table
			Subnet
		is associated with	Security group
		is attached to	Internet gateway
			VPN gateway
	`AWS::EC2::VPNConnection`	is attached to	Customer gateway
			VPN gateway
	`AWS::EC2::VPNGateway`	is attached to	Virtual private cloud (VPC)
			VPN connection
		is contained in	Route table

AWS Auto Scaling

AWS Service	Resource Type Value	Relationship	Related Resource
Auto Scaling	`AWS::AutoScaling::AutoScalingGroup`	contains	Amazon EC2 instance
		is associated with	Classic Load Balancer
			Auto Scaling launch configuration
			Subnet
	`AWS::AutoScaling::LaunchConfiguration`	is associated with	Amazon EC2 security group
	`AWS::AutoScaling::ScalingPolicy`	is associated with	Auto Scaling group
			Alarm
	`AWS::AutoScaling::ScheduledAction`	is associated with	Auto Scaling group

AWS Certificate Manager

AWS Service	Resource Type Value	Relationship	Related Resource
AWS Certificate Manager	`AWS::ACM::Certificate`	NA	NA

AWS CloudFormation

AWS Service	Resource Type Value	Relationship	Related Resource
AWS CloudFormation	`AWS::CloudFormation::Stack`	contains*	Supported AWS resource types

*AWS Config records configuration changes to AWS CloudFormation stacks and supported resource types in the stacks. AWS Config does not record configuration changes for resource types in the stack that are not yet supported. Unsupported resource types appear in the supplementary configuration section of the configuration item for the stack.

AWS CloudTrail

AWS Service	Resource Type Value	Relationship	Related Resource
AWS CloudTrail	`AWS::CloudTrail::Trail`	NA	NA

AWS CodeBuild

AWS Service	Resource Type Value	Relationship	Related Resource
AWS CloudBuild	`AWS::CodeBuild::Project`[*]	is associated with	S3 bucket
			IAM role

[*] To learn more about how AWS Config integrates with AWS CodeBuild, see Use AWS Config with AWS CodeBuild Sample.

AWS CodePipeline

AWS Service	Resource Type Value	Relationship	Related Resource
AWS CodePipeline	`AWS::CodePipeline::Pipeline`[*]	is attached to	S3 bucket
		is associated with	IAM role
			Code project
			Lambda function
			Cloudformation stack
			ElasticBeanstalk application

[*] AWS Config records configuration changes to AWS CodePipeline pipelines and supported resource types in the pipelines. AWS Config does not record configuration changes for resource types in the pipelines that are not yet supported. Unsupported resource types such as `CodeCommit repository`, `CodeDeploy applicaiton`, `ECS cluster`, and `ECS service` appear in the supplementary configuration section of the configuration item for the stack.

AWS Elastic Beanstalk

AWS Service	Resource Type Value	Relationship	Related Resource
AWS Elastic Beanstalk	`AWS::ElasticBeanstalk::Application`	contains	Elastic Beanstalk Application Version
			Elastic Beanstalk Environment
		is associated with	IAM role
	`AWS::ElasticBeanstalk::ApplicationVersion`	is contained in	Elastic Beanstalk Application
		is associated with	Elastic Beanstalk Environment
			S3 bucket

AWS Service	Resource Type Value	Relationship	Related Resource
	AWS::ElasticBeanstalk::Environment	is contained in	Elastic Beanstalk Application
		is associated with	Elastic Beanstalk Application Version
			IAM role
		contains	CloudFormation Stack

AWS Identity and Access Management

AWS Service	Resource Type Value	Relationship	Related Resource
AWS Identity and Access Management	AWS::IAM::User*	is attached to	IAM group
			IAM customer managed policy
	AWS::IAM::Group*	contains	IAM user
		is attached to	IAM customer managed policy
	AWS::IAM::Role*	is attached to	IAM customer managed policy
	AWS::IAM::Policy	is attached to	IAM user
			IAM group
			IAM role

*AWS Identity and Access Management (IAM) resources are *global resources*. Global resources are not tied to an individual region and can be used in all regions. The configuration details for a global resource are the same in all regions. For more information, see Selecting Which Resources AWS Config Records (p. 52).

AWS Config includes inline policies with the configuration details that it records.

AWS Lambda Function

AWS Service	Resource Type Value	Relationship	Related Resource
AWS Lambda Function	AWS::Lambda::Function	is associated with	IAM role
			EC2 security group
		contains	EC2 subnet

AWS Shield

AWS Service	Resource Type Value	Relationship	Related Resource
AWS Shield*	`AWS::Shield::Protection`	is associated with	Amazon CloudFront distribution
	`AWS::ShieldRegional::Protection`	is associated with	EC2 EIP
		is associated with	ElasticLoadBalancing Balancer
		is associated with	ElasticLoadBalancingV2 LoadBalancer

*AWS Config support for `AWS::Shield::Protection` is available only in the US East (N. Virginia) region. The `AWS::ShieldRegional::Protection` is available in all regions where AWS Shield is supported.

AWS Systems Manager

AWS Service	Resource Type Value	Relationship	Related Resource
AWS Systems Manager	`AWS::SSM::ManagedInstanceInventory`*	is associated with	EC2 instance
	`AWS::SSM::PatchCompliance`	is associated with	Managed Instance Inventory
	`AWS::SSM::AssociationCompliance`	is associated with	Managed Instance Inventory

*To learn more about managed instance inventory, see Recording Software Configuration for Managed Instances (p. 55).

AWS WAF

AWS Service	Resource Type Value	Relationship	Related Resource
AWS WAF*	`AWS::WAF::RateBasedRule`	NA	NA
	`AWS::WAF::Rule`	NA	NA
	`AWS::WAF::WebACL`	is associated with	WAF rule
			WAF rate based rule
			WAF rulegroup
	`AWS::WAF::RuleGroup`	is associated with	WAF rule
	`AWS::WAFRegional::RateBasedRule`	NA	NA
	`AWS::WAFRegional::Rule`	NA	NA

AWS Service	Resource Type Value	Relationship	Related Resource
	`AWS::WAFRegional::WebACL`	is associated with	ElasticLoadBalancingV2 LoadBalancer
			WAFRegional rule
			WAFRegional rate based rule
			WAFRegional rulegroup
	`AWS::WAFRegional::RuleGroup`	is associated with	WAFRegional rule

[*]The AWS WAF resource type values are available only in the US East (N. Virginia) Region. The `AWS::WAFRegional::RateBasedRule`, `AWS::WAFRegional::Rule`, `AWS::WAFRegional::WebACL`, and `AWS::WAFRegional::RuleGroup` are available in all regions where AWS WAF is supported.

AWS X-Ray

AWS Service	Resource Type Value	Relationship	Related Resource
AWS X-Ray	`AWS::XRay::EncryptionConfig`	NA	NA

Elastic Load Balancing

AWS Service	Resource Type Value	Relationship	Related Resource
Elastic Load Balancing	Application Load Balancer `AWS::ElasticLoadBalancingV2::LoadBalancer`	is associated with	EC2 security group
		is attached to	Subnet
		is contained in	Virtual private cloud (VPC)
	Classic Load Balancer `AWS::ElasticLoadBalancing::LoadBalancer`	is associated with	EC2 security group
		is attached to	Subnet
		is contained in	Virtual private cloud (VPC)
	Network Load Balancer `AWS::ElasticLoadBalancingV2::LoadBalancer`	NA	NA

Getting Started with AWS Config

When you sign up for AWS, your account has access to all AWS services. You pay only for the services that you use.

If you do not have an AWS account, use the following procedure to create one.

To sign up for AWS

1. Open https://aws.amazon.com/, and then choose **Create an AWS Account**.

   Note
   If you previously signed in to the AWS Management Console using AWS account root user credentials, choose **Sign in to a different account**. If you previously signed in to the console using IAM credentials, choose **Sign-in using root account credentials**. Then choose **Create a new AWS account**.
2. Follow the online instructions.

   Part of the sign-up procedure involves receiving a phone call and entering a verification code using the phone keypad.

After you sign up for an AWS account, you can get started with AWS Config with the AWS Management Console, AWS CLI, or the AWS SDKs. Use the console for a quick and streamlined process.

When you set up AWS Config, you can complete the following:

- Specify the resource types that you want AWS Config to record.
- Set up an Amazon S3 bucket to receive a configuration snapshot on request and configuration history.
- Set up an Amazon SNS topic to send configuration stream notifications.
- Grant AWS Config the permissions it needs to access the Amazon S3 bucket and the SNS topic.
- Specify the rules that you want AWS Config to use to evaluate compliance information for the recorded resource types.

For more information about using the AWS CLI, see Setting Up AWS Config with the AWS CLI (p. 22).

For more information about using the AWS SDKs, see AWS Software Development Kits for AWS Config (p. 194).

Topics

Setting Up AWS Config with the Console

You can use the AWS Management Console to get started with AWS Config to do the following:

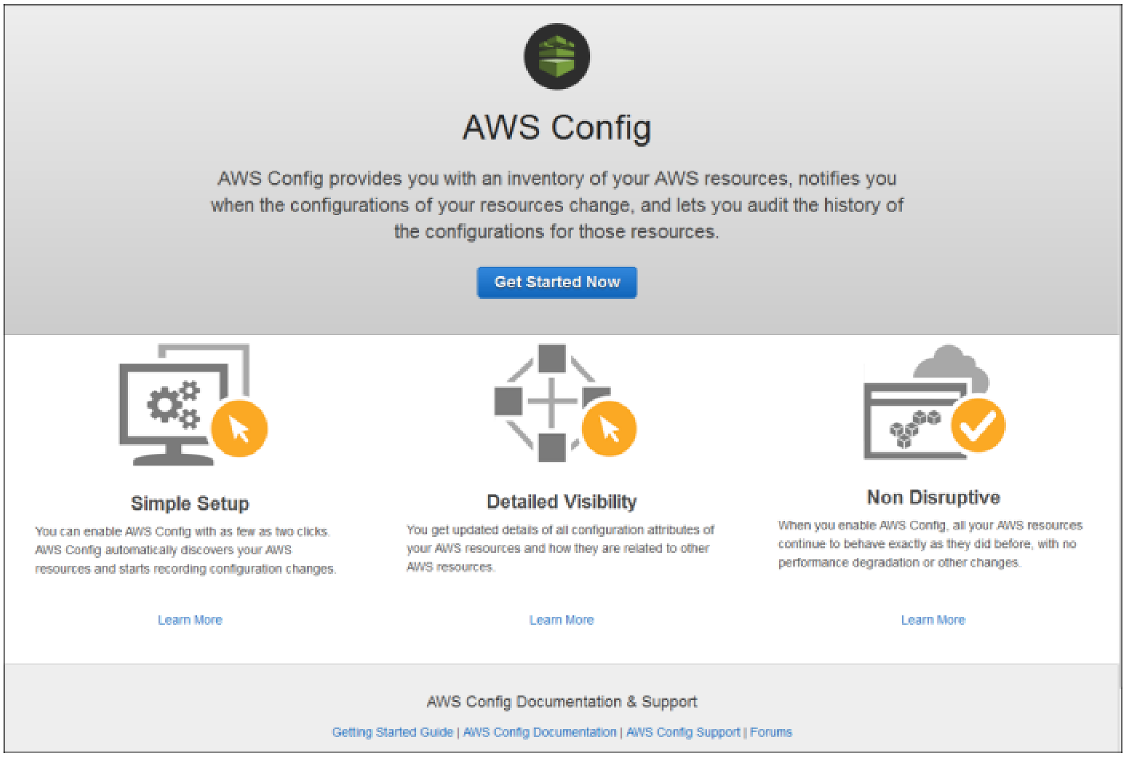
- Specify the resource types you want AWS Config to record.
- Set up Amazon SNS to notify you of configuration changes.

- Specify an Amazon S3 bucket to receive configuration information.
- Add AWS Config managed rules to evaluate the resource types.

If you are using AWS Config for the first time or configuring AWS Config for a new region, you can choose managed rules to evaluate resource configurations. For regions that support AWS Config and AWS Config Rules, see AWS Config Regions and Endpoints in the *Amazon Web Services General Reference*.

To set up AWS Config with the console

1. Sign in to the AWS Management Console and open the AWS Config console at https://console.aws.amazon.com/config/.
2. If this is the first time you are opening the AWS Config console or you are setting up AWS Config in a new region, the AWS Config console page looks like the following:



AWS Config

AWS Config provides you with an inventory of your AWS resources, notifies you when the configurations of your resources change, and lets you audit the history of the configurations for those resources.

Simple Setup

You can enable AWS Config with as few as two clicks. AWS Config automatically discovers your AWS resources and starts recording configuration changes.

Detailed Visibility

You get updated details of all configuration attributes of your AWS resources and how they are related to other AWS resources.

Non Disruptive

When you enable AWS Config, all your AWS resources continue to behave exactly as they did before, with no performance degradation or other changes.

AWS Config Documentation & Support

Getting Started Guide | AWS Config Documentation | AWS Config Support | Forums

3. Choose **Get Started Now**.
4. On the **Settings** page, for **Resource types to record**, specify the AWS resource types you want AWS Config to record:

   - **All resources** – AWS Config records all supported resources with the following options:
     - **Record all resources supported in this region** – AWS Config records configuration changes for every supported type of regional resource. When AWS Config adds support for a new resource type, AWS Config automatically starts recording resources of that type.
     - **Include global resources** – AWS Config includes supported types of global resources with the resources that it records (for example, IAM resources). When AWS Config adds support for a new global resource type, AWS Config automatically starts recording resources of that type.
   - **Specific types** – AWS Config records configuration changes for only the AWS resource types that you specify.

   For more information about these options, see Selecting Which Resources AWS Config Records (p. 52).

5. For **Amazon S3 Bucket**, choose the Amazon S3 bucket to which AWS Config sends configuration history and configuration snapshot files:

   - **Create a new bucket** – For **Bucket Name**, type a name for your Amazon S3 bucket.

     The name that you type must be unique across all existing bucket names in Amazon S3. One way to help ensure uniqueness is to include a prefix; for example, the name of your organization. You can't change the bucket name after it is created. For more information, see Bucket Restrictions and Limitations in the *Amazon Simple Storage Service Developer Guide*.
   - **Choose a bucket from your account** – For **Bucket Name**, choose your preferred bucket.
   - **Choose a bucket from another account** – For **Bucket Name**, type the bucket name.

     If you choose a bucket from another account, that bucket must have policies that grant access permissions to AWS Config. For more information, see Permissions for the Amazon S3 Bucket (p. 89).
6. For **Amazon SNS Topic**, choose whether AWS Config streams information by selecting the **Stream configuration changes and notifications to an Amazon SNS topic**. AWS Config sends notifications such as configuration history delivery, configuration snapshot delivery, and compliance.
7. If you chose to have AWS Config stream to an Amazon SNS topic, choose the target topic:

   - **Create a new topic** – For **Topic Name**, type a name for your SNS topic.
   - **Choose a topic from your account** – For **Topic Name**, select your preferred topic.
   - **Choose a topic from another account** – For **Topic ARN**, type the Amazon Resource Name (ARN) of the topic. If you choose a topic from another account, the topic must have policies that grant access permissions to AWS Config. For more information, see Permissions for the Amazon SNS Topic (p. 91).

   Note
   The Amazon SNS topic must exist in the same region as the region in which you set up AWS Config.
8. For **AWS Config role**, choose the IAM role that grants AWS Config permission to record configuration information and send this information to Amazon S3 and Amazon SNS:

   - **Create a role** – AWS Config creates a role that has the required permissions. For **Role name**, you can customize the name that AWS Config creates.
   - **Choose a role from your account** – For **Role name**, choose an IAM role in your account. AWS Config will attach the required policies. For more information, see Permissions for the IAM Role Assigned to AWS Config (p. 86).

     Note
     Check the box if you want to use the IAM role as it. AWS Config will not attach policies to the role.
9. If you are setting up AWS Config in a region that supports rules, choose **Next**. See Setting Up AWS Config Rules with the Console (p. 27).

   Otherwise, choose **Save**. AWS Config displays the **Resource inventory** page.

For information about looking up the existing resources in your account and understanding the configurations of your resources, see View, and Manage Your AWS Resources (p. 31).

If you chose to have AWS Config stream information to an Amazon SNS topic, you can receive notifications by email. For more information, see Monitoring AWS Config Resource Changes by Email (p. 56). You can also use Amazon Simple Queue Service to monitor AWS resources programmatically. For more information, see Monitoring AWS Resource Changes with Amazon SQS (p. 180).

Setting Up AWS Config with the AWS CLI

You can use the AWS Command Line Interface to control and automate the services from AWS.

For more information about the AWS CLI and for instructions on installing the AWS CLI tools, see the following in the *AWS Command Line Interface User Guide*.

- AWS Command Line Interface User Guide
- Getting Set Up with the AWS Command Line Interface

See the following topics to set up AWS Config with the AWS CLI. After you set up AWS Config, you can add rules to evaluate the resource types in your account. For more information about setting up rules with AWS Config, see View, Update, and Delete Rules (AWS CLI) (p. 162).

Topics

Prerequisites

Follow this procedure to create an Amazon S3 bucket, an Amazon SNS topic, and an IAM role with attached policies. You can then use the AWS CLI to specify the bucket, topic, and role for AWS Config.

Contents

Creating an Amazon S3 Bucket

If you already have an Amazon S3 bucket in your account and want to use it, skip this step and go to Creating an Amazon SNS Topic (p. 23).

To create an Amazon S3 bucket with the AWS CLI, use the create-bucket command.

To create an Amazon S3 bucket with the console

1. Sign in to the AWS Management Console and open the Amazon S3 console at https://console.aws.amazon.com/s3/.
2. Choose **Actions** and then choose **Create Bucket**.
3. For the **Bucket Name:**, type a name for your Amazon S3 bucket, such as `my-config-bucket`.

   Note
   Make sure the bucket name you choose is unique across all existing bucket names in Amazon S3. You cannot change the name of a bucket after it is created. For more information on bucket naming rules and conventions, see Bucket restrictions and Limitations in the *Amazon Simple Storage Service Developer Guide*.
4. Choose **Create**.

Note
You can also use an Amazon S3 bucket from a different account, but you may need to create a policy for the bucket that grants access permissions to AWS Config. For information on granting permissions to an Amazon S3 bucket, see Permissions for the Amazon S3 Bucket (p. 89), and then go to Creating an Amazon SNS Topic (p. 23).

Creating an Amazon SNS Topic

If you already have an Amazon SNS topic in your account and want to use it, skip this step and go to Creating an IAM Role (p. 23).

To create an Amazon SNS topic with the AWS CLI, use the create-topic command.

To create an Amazon SNS topic with the console

1. Sign in to the AWS Management Console and open the Amazon SNS console at https://console.aws.amazon.com/sns/v2/home.
2. Choose **Create New Topic**.
3. For **Topic Name**, type a name for your SNS topic, such as *my-config-notice*.
4. Choose **Create Topic**.

   The new topic appears in the **Topic Details** page. Copy the **Topic ARN** for the next task.

   For more information, see ARN Format in the *AWS General Reference*.

To receive notifications from AWS Config, you must subscribe an email address to the topic.

To subscribe an email address to the SNS topic

1. In the Amazon SNS console, choose **Subscriptions** in the navigation pane.
2. On the **Subscriptions** page, choose **Create Subscription**.
3. For **Topic ARN**, paste the topic ARN you copied in the previous task.
4. For **Protocol**, choose **Email**.
5. For **Endpoint**, type an email address that you can use to receive the notification and then choose **Subscribe**.
6. Go to your email application and open the message from **AWS Notifications**. Choose the link to confirm your subscription.

   Your web browser displays a confirmation response from Amazon SNS. Amazon SNS is now configured to receive notifications and send the notification as an email to the specified email address.

Note
You can also use an Amazon SNS topic in a different account, but in that case you might need to create a policy for topic that grants access permissions to AWS Config. For information on granting permissions to an Amazon SNS topic, see Permissions for the Amazon SNS Topic (p. 91) and then go to Creating an IAM Role (p. 23).

Creating an IAM Role

You can use the IAM console to create an IAM role that grants AWS Config permissions to access your Amazon S3 bucket, access your Amazon SNS topic, and get configuration details for supported AWS resources. After you create the IAM role, you will create and attach policies to the role.

To create an IAM role with the AWS CLI, use the create-role command. You can then attach a policy to the role with the attach-role-policy command.

To create an IAM role with the console

1. Sign in to the AWS Management Console and open the IAM console at https://console.aws.amazon.com/iam/.
2. In the IAM console, choose **Roles** in the navigation pane, and choose **Create New Role**.
3. For **Role Name**, type a name that describes the purpose of this role. Role names must be unique within your AWS account. Because various entities might reference the role, you cannot edit the name of the role after you create it.

   Choose **Next Step**.
4. Choose **AWS Service Roles**, and then choose **Select** for **AWS Config** .
5. On the **Attach Policy** page, select **AWSConfigRole**. This AWS managed policy grants AWS Config permission to get configuration details for supported AWS resources. Then, choose **Next Step**.
6. On the **Review** page, review the details about your role, and choose **Create Role**.
7. On the **Roles** page, choose the role that you created to open its details page.

You will expand the permissions in the role by creating inline policies that allow AWS Config to access your Amazon S3 bucket and your Amazon SNS topic.

To create an inline policy that grants AWS Config permission to access your Amazon S3 bucket

1. In the **Permissions** section, expand the **Inline Policies** section, and choose **click here**.
2. Choose **Custom Policy**, and choose **Select**.
3. For **Policy Name**, type a name for your inline policy.
4. Copy the example Amazon S3 bucket policy in IAM Role Policy for Amazon S3 Bucket (p. 87) and paste it in the **Policy Document** editor.

   Important

   Before you proceed to the next step, replace the following values in the policy. If you do not replace the values, your policy will fail.

   - `myBucketName` – Replace with the name of your Amazon S3 bucket.
   - `prefix` – Replace with your own prefix or leave blank by removing the trailing '/'.
   - `myAccountID-WithoutHyphens` – Replace with your AWS account ID.
5. Choose **Apply Policy**.

To create an inline policy that grants AWS Config permissions to deliver notifications to your Amazon SNS topic

1. In the **Permissions** section, expand the **Inline Policies** section, and choose **click here**.
2. Choose **Custom Policy**, and choose **Select**.
3. For **Policy Name**, type a name for your inline policy.
4. Copy the Amazon SNS topic example policy in IAM Role Policy for Amazon SNS Topic (p. 88) and paste it in the **Policy Document** editor.

   Important

   Before you proceed to the next step, replace `arn:aws:sns:region:account-id:myTopic` with the ARN you saved when you created your Amazon SNS topic.

5. Choose **Apply Policy**.

Turning on AWS Config

You can use the AWS CLI to turn on AWS Config with the subscribe command and a few parameters.

You can use the `subscribe`command to have AWS Config start recording configurations of all supported AWS resources in your account. The `subscribe` command creates a configuration recorder, a delivery channel using a specified Amazon S3 bucket and Amazon SNS topic, and starts recording the configuration items. You can have one configuration recorder and one delivery channel per region in your account.

To turn on AWS Config, use the `subscribe` with the following parameters:

The `subscribe` command uses the following options:

`--s3-bucket`

Specify the name of an Amazon S3 bucket existing in your account or existing in another account.

`--sns-topic`

Specify the Amazon Resource Name (ARN) of an SNS topic existing in your account or existing in another account.

`--iam-role`

Specify the Amazon Resource Name (ARN) of an existing IAM Role.

The specified IAM role must have policies attached that grant AWS Config permissions to deliver configuration items to the Amazon S3 bucket and the Amazon SNS topic, and the role must grant permissions to the `Describe` APIs of the supported AWS resources.

Your command should look like the following example:

```
$ aws configservice subscribe --s3-bucket my-config-bucket --sns-topic arn:aws:sns:us-
east-2:012345678912:my-config-notice --iam-role arn:aws:iam::012345678912:role/myConfigRole
```

After you run the `subscribe` command, AWS Config records all supported resources that it finds in the region. If you don't want AWS Config to record supported resources, specify the types of resources to record by updating the configuration recorder to use a recording group. For more information, see Selecting Resources (AWS CLI) (p. 53).

Verify that AWS Config Is On

Once you have turned on AWS Config, you can use AWS CLI commands to verify that the AWS Config is running and that the `subscribe` command has created a configuration recorder and a delivery channel. You can also confirm that AWS Config has started recording and delivering configurations to the delivery channel.

Contents

Verify that the Delivery Channel Is Created

Use the `describe-delivery-channels` command to verify that your Amazon S3 bucket and Amazon SNS topic is configured.

```
$ aws configservice describe-delivery-channels
{
    "DeliveryChannels": [
        {
            "snsTopicARN": "arn:aws:sns:us-west-2:0123456789012:my-config-topic",
            "name": "my-delivery-channel",
            "s3BucketName": "my-config-bucket"
        }
    ]
}
```

When you use the CLI, the service API, or the SDKs to configure your delivery channel and do not specify a name, AWS Config automatically assigns the name "`default`".

Verify that the Configuration Recorder Is Created

Use the `describe-configuration-recorders` command to verify that a configuration recorder is created and that the configuration recorder has assumed an IAM role. For more information, see Creating an IAM Role (p. 23).

```
$ aws configservice describe-configuration-recorders
{
    "ConfigurationRecorders": [
        {
            "roleARN": "arn:aws:iam::012345678912:role/myConfigRole",
            "name": "default"
        }
    ]
}
```

Verify that AWS Config has started recording

Use the `describe-configuration-recorder-status` command to verify that the AWS Config has started recording the configurations of the supported AWS resources existing in your account. The recorded configurations are delivered to the specified delivery channel.

```
$ aws configservice describe-configuration-recorder-status
{
    "ConfigurationRecordersStatus": [
        {
            "name": "default",
            "lastStatus": "SUCCESS",
            "lastStopTime": 1414511624.914,
            "lastStartTime": 1414708460.276,
            "recording": true,
            "lastStatusChangeTime": 1414816537.148,
            "lastErrorMessage": "NA",
            "lastErrorCode": "400"
        }
    ]
}
```

The value `true` in the `recording` field confirms that the configuration recorder has started recording configurations of all your resources. AWS Config uses UTC format (GMT - 8:00) to record the time.

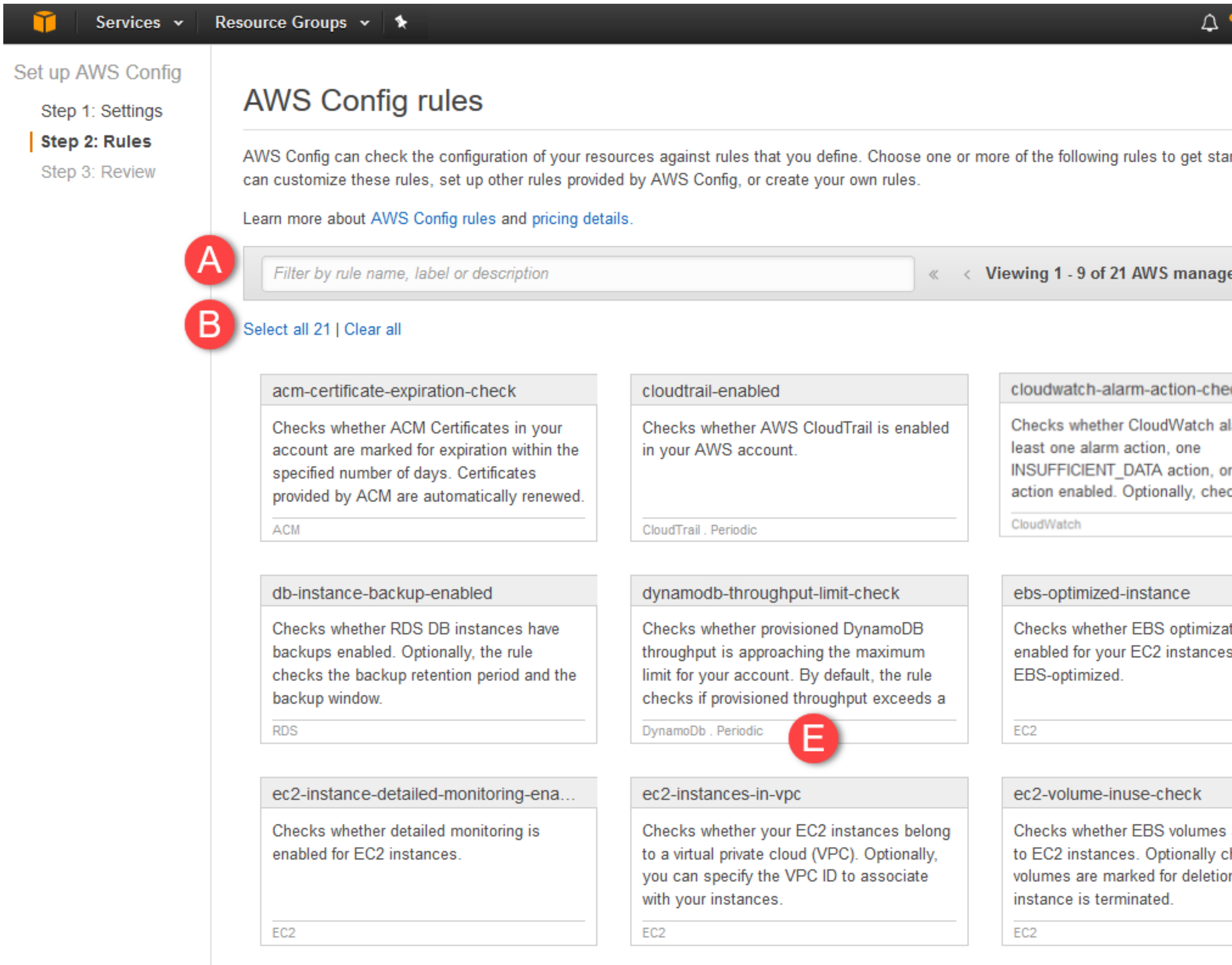
For information about looking up the resources existing in your account and understanding the configurations of your resources, see View, and Manage Your AWS Resources (p. 31).

Setting Up AWS Config Rules with the Console

The **Rules** page provides initial AWS managed rules that you can add to your account. After set up, AWS Config evaluates your AWS resources against the rules that you choose. You can update the rules and create additional managed rules after set up.

To see the complete list of AWS managed rules, see List of AWS Config Managed Rules (p. 98).

For example, you can choose the **cloudtrail-enabled** rule, which evaluates whether your account has a CloudTrail trail. If your account doesn't have a trail, AWS Config flags the resource type and the rule as noncompliant.


Services
Resource Groups
Set up AWS Config
Step 1: Settings
Step 2: Rules
Step 3: Review
A
B
E
Filter by rule name, label or description
Viewing 1 - 9 of 21 AWS manage
Select all 21 | Clear all

AWS Config rules

AWS Config can check the configuration of your resources against rules that you define. Choose one or more of the following rules to get star can customize these rules, set up other rules provided by AWS Config, or create your own rules.

Learn more about AWS Config rules and pricing details.

acm-certificate-expiration-check
Checks whether ACM Certificates in your account are marked for expiration within the specified number of days. Certificates provided by ACM are automatically renewed.
ACM

cloudtrail-enabled
Checks whether AWS CloudTrail is enabled in your AWS account.
CloudTrail . Periodic

cloudwatch-alarm-action-che
Checks whether CloudWatch al least one alarm action, one INSUFFICIENT_DATA action, or action enabled. Optionally, chec
CloudWatch

db-instance-backup-enabled
Checks whether RDS DB instances have backups enabled. Optionally, the rule checks the backup retention period and the backup window.
RDS

dynamodb-throughput-limit-check
Checks whether provisioned DynamoDB throughput is approaching the maximum limit for your account. By default, the rule checks if provisioned throughput exceeds a
DynamoDb . Periodic

ebs-optimized-instance
Checks whether EBS optimizat enabled for your EC2 instances EBS-optimized.
EC2

ec2-instance-detailed-monitoring-ena...
Checks whether detailed monitoring is enabled for EC2 instances.
EC2

ec2-instances-in-vpc
Checks whether your EC2 instances belong to a virtual private cloud (VPC). Optionally, you can specify the VPC ID to associate with your instances.
EC2

ec2-volume-inuse-check
Checks whether EBS volumes to EC2 instances. Optionally cl volumes are marked for deletion instance is terminated.
EC2

On the **Rules** page, you can do the following:

A. Type in the search field to filter results by rule name, description, or label. For example, type **EC2** to return rules that evaluate EC2 resource types or type **periodic** to return rules that have a periodic trigger. Type "new" to search for newly added rules. For more information about trigger types, see Specifying Triggers for AWS Config Rules (p. 96).

B. Choose **Select all** to add all rules or **Clear all** to remove all rules.

C. Choose the arrow icon to see the next page of rules.

D. Recently added rules are marked as **New**.

E. See the labels to identify the service that the rule evaluates and if the rule has a periodic trigger.

To set up AWS Config rules

1. On the **Rules** page, choose the rules that you want. You can customize these rules and add other rules to your account after set up.
2. Choose **Next**.
3. On the **Review** page, verify your setup details, and then choose **Confirm**.

   The **Rules** page shows your rules and their current compliance results in the table. The result for each rule is **Evaluating...** until AWS Config finishes evaluating your resources against the rule. You can update the results with the refresh button. When AWS Config finishes evaluations, you can see the rules and resource types that are compliant or noncompliant. For more information, see Viewing Configuration Compliance (p. 93).

   Note
   AWS Config evaluates only the resource types that it is recording. For example, if you add the **cloudtrail-enabled** rule but don't record the CloudTrail trail resource type, AWS Config can't evaluate whether the trails in your account are compliant or noncompliant. For more information, see Selecting Which Resources AWS Config Records (p. 52).

You can view, edit, and delete your existing rules. You can also create additional AWS managed rules or create your own. For more information, see Managing your AWS Config Rules (p. 160).

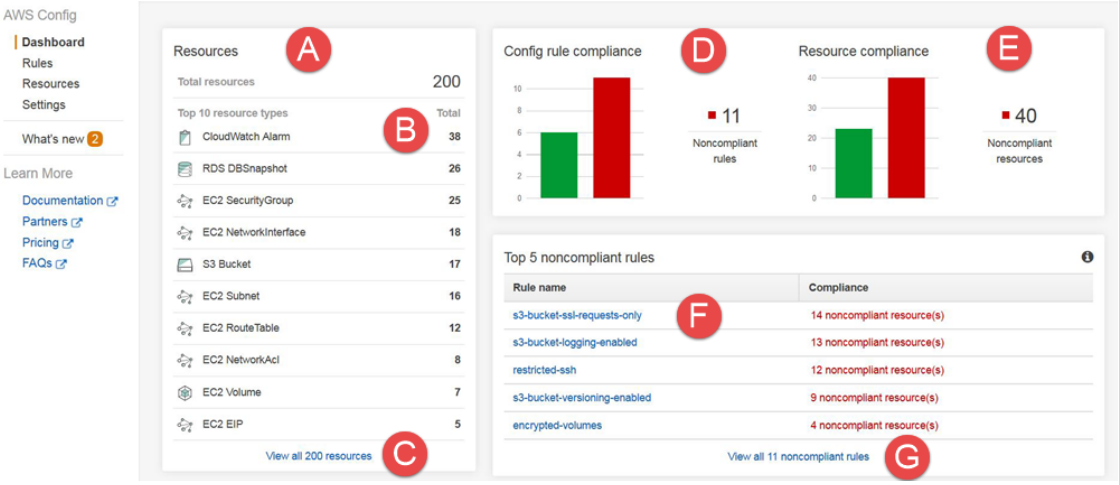
Viewing the AWS Config Dashboard

Use the **Dashboard** to see an overview of your resources, rules, and their compliance state. This page helps you quickly identify the top resources in your account, and if you have any rules or resources that are noncompliant.

After setup, AWS Config starts recording the specified resources and then evaluates them against your rules. It may take a few minutes for AWS Config to display your resources, rules, and their compliance states on the **Dashboard**.

To use the AWS Config Dashboard

1. Sign in to the AWS Management Console and open the AWS Config console at https://console.aws.amazon.com/config/.
2. Choose **Dashboard**.
3. Use the **Dashboard** to see an overview of your resources, rules, and their compliance state.



Resources

Total resources	200
Top 10 resource types	Total
CloudWatch Alarm	38
RDS DBSnapshot	26
EC2 SecurityGroup	25
EC2 NetworkInterface	18
S3 Bucket	17
EC2 Subnet	16
EC2 RouteTable	12
EC2 NetworkAcl	8
EC2 Volume	7
EC2 EIP	5

View all 200 resources

Top 5 noncompliant rules

Rule name	Compliance
s3-bucket-ssl-requests-only	14 noncompliant resource(s)
s3-bucket-logging-enabled	13 noncompliant resource(s)
restricted-ssh	12 noncompliant resource(s)
s3-bucket-versioning-enabled	9 noncompliant resource(s)
encrypted-volumes	4 noncompliant resource(s)

View all 11 noncompliant rules

On the **Dashboard**, you can do the following:

A. View the total number of resources that AWS Config is recording.

B. View the resource types that AWS Config is recording, in descending order (the number of resources). Choose a resource type to go to the **Resources inventory** page.

C. Choose **View all resources** to go to the **Resources inventory** page.

D. View the number of noncompliant rules.

E. View the number of noncompliant resources.

F. View the top noncompliant rules, in descending order (the number of resources).

G. Choose **View all noncompliant rules** to go to the **Rules** page.

The **Dashboard** shows the resources and rules specific to your region and account. It does not show resources or rules from other regions or other AWS accounts.

Note

The **Evaluate your AWS resource configuration using Config rules** message can appear on the **Dashboard** for the following reasons:

- You haven't set up AWS Config Rules for your account. You can choose **Add rule** to go to the **Rules** page.
- AWS Config is still evaluating your resources against your rules. You can refresh the page to see the latest evaluation results.
- AWS Config evaluated your resources against your rules and did not find any resources in scope. You can specify the resources for AWS Config to record in the **Settings** page. For more information, see Selecting Which Resources AWS Config Records (p. 52).

Viewing AWS Resource Configurations and Managing AWS Config

Use AWS Config for the following:

- View all the resources that AWS Config is recording in your account.
- Customize the types of resources that AWS Config records.
- View configuration changes over a specific period of time for a resource in AWS Config console and AWS CLI.
- View AWS resource configuration history
- View AWS resource compliance history
- View all the notifications that AWS Config sends to an Amazon SNS topic.
- Modify settings for your IAM role
- Modify or delete your delivery channels

Topics

Components of a Configuration Item

A configuration item consists of the following components.

Component	Description	Contains
Metadata	Information about this configuration item	• Version ID • Time when the configuration item was captured • Status of the configuration item indicating whether the item was captured successfully • State ID indicating the ordering of the configuration items of a resource
Attributes[1]	Resource attributes	• Resource ID • List of key–value tags[2] for this resource

Component	Description	Contains
		• Resource type; see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9) • Amazon Resource Name (ARN) • Availability Zone that contains this resource, if applicable • Time the resource was created
Relationships	How the resource is related to other resources associated with the account	Description of the relationship, such as Amazon EBS volume `vol-1234567` is attached to an Amazon EC2 instance `i-a1b2c3d4`
Current configuration	Information returned through a call to the Describe or List API of the resource	For example, `DescribeVolumes` API returns the following information about the volume: • Availability Zone the volume is in • Time the volume was attached • ID of the EC2 instance it is attached to • Current status of the volume • State of DeleteOnTermination flag • Device the volume is attached to • Type of volume, such as `gp2`, `io1`, or `standard`

Notes

1. A configuration item relationship does not include network flow or data flow dependencies. Configuration items cannot be customized to represent your application architecture.
2. AWS Config does not record key–value tags for CloudTrail trail, CloudFront distribution, and CloudFront streaming distribution.
3. As of Version 1.3, the relatedEvents field is empty. You can access the LookupEvents API in the *AWS CloudTrail API Reference* to retrieve the events for the resource.
4. As of Version 1.3, the configurationItemMD5Hash field is empty. You can use the configurationStateId field to ensure you have the latest configuration item.

Viewing AWS Resource Configurations and History

You can view all of the resources that AWS Config is recording in your account, the configuration changes that took place for a resource over a specified time period, and the relationships of the selected resource with all the related resources. You can also view compliance state changes for resources as evaluated by AWS Config Rules displayed in a timeline.

Topics

Looking Up Resources That Are Discovered by AWS Config

You can use the AWS Config console, AWS CLI, and AWS Config API to look up the resources that AWS Config has taken an inventory of, or *discovered*, including deleted resources and resources that AWS Config is not currently recording. AWS Config discovers supported resource types only. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9).

Looking Up Resources (AWS Config Console)

You can use resource types or tag information to look up resources in the AWS Config console.

To look up resources

1. Sign in to the AWS Management Console and open the AWS Config console at https://console.aws.amazon.com/config/.
2. On the **Resource inventory** page, specify the search options for the resources that you want to look up:
   - Choose **Resources** and then choose one or more resource types in the list. This list includes resource types that AWS Config supports. To narrow results, type a resource ID or, if applicable, a resource name in the next box. You can also choose **Include deleted resources**.
   - Choose **Tag** and type a tag key that is applied to your resources, such as **`CostCenter`**. To narrow results, type a tag value in the next box.
3. After you specify the search options, choose **Look up**.
4. AWS Config lists the resources that match your search options. You can see the following information about the resources:
   - **Resource identifier** – The resource identifier might be a resource ID or a resource name, if applicable. Choose the resource identifier link to view the resource details page.
   - **Resource type** – The type of the resource is listed.
   - **Compliance** – The status of the resource that AWS Config evaluated against your rule.

   For more information, see Viewing Configuration Details (p. 33).

Looking Up Resources (AWS CLI)

You can use the AWS CLI to list resources that AWS Config has discovered.

To look up resources (AWS CLI)

- Use the **aws configservice** `list-discovered-resources` command:

  Example

```
$ aws configservice list-discovered-resources --resource-type "AWS::EC2::Instance"
        {
            "resourceIdentifiers": [
                {
                    "resourceType": "AWS::EC2::Instance",
                    "resourceId": "i-nnnnnnnn"
                }
            ]
        }
```

To view the configuration details of a resource that is listed in the response, use the `get-resource-config-history` command, and specify the resource type and ID. For an example of this command and the response from AWS Config, see Viewing Configuration History (p. 35).

Looking up Resources (AWS Config API)

You specify a resource type, and AWS Config returns a list of resource identifiers for resources of that type. For more information, see ResourceIdentifier in the *AWS Config API Reference*.

To look up resources (AWS Config API)

- Use the ListDiscoveredResources action.

To get the configuration details of a resource that is listed in the response, use the GetResourceConfigHistory action, and specify the resource type and ID.

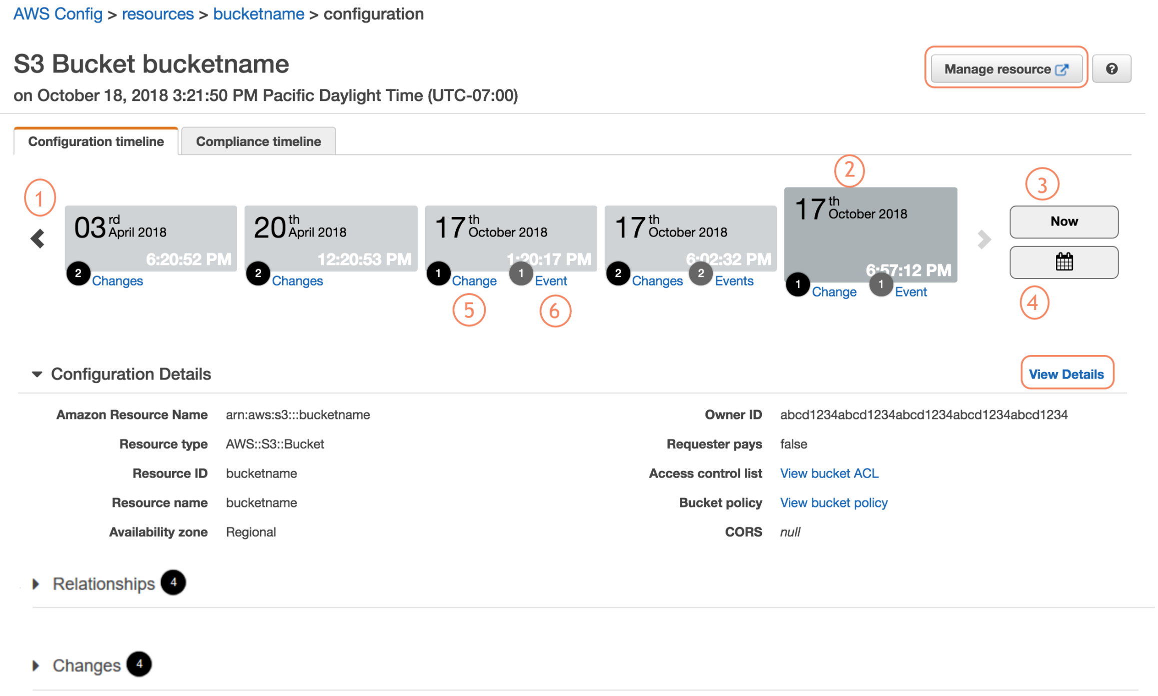
Viewing Configuration Details

You can view the configuration, relationships, and number of changes made to a resource in the AWS Config console. You can view the configuration history for a resource using AWS CLI.

Viewing Configuration Details (Console)

When you look up resources on the **Resource inventory** page, click the resource name or ID in the resource identifier column to view the resource's details page. The details page provides information about the configuration, relationships, and number of changes made to that resource.

The blocks at the top of the page are collectively called the *timeline*. The timeline shows the date and the time that the recording was made.



AWS Config > resources > bucketname > configuration

S3 Bucket bucketname

on October 18, 2018 3:21:50 PM Pacific Daylight Time (UTC-07:00)

Amazon Resource Name	arn:aws:s3:::bucketname	Owner ID	abcd1234abcd1234abcd1234abcd1234abcd1234
Resource type	AWS::S3::Bucket	Requester pays	false
Resource ID	bucketname	Access control list	View bucket ACL
Resource name	bucketname	Bucket policy	View bucket policy
Availability zone	Regional	CORS	*null*

Details page features

1. Click to scroll the timeline to an earlier point in the resource's configuration history.
2. Click a timeline block to select that time period. The descriptions in the **Configuration Details**, **Relationships**, and **Changes** sections comprise the configuration item of the selected resource at the selected time period.
3. Click to return the timeline to the current time.
4. Click to view a configuration item by specifying a date (and, if needed, time) and then choose **Apply**.
5. Click to navigate to the **Changes** section. The number that follows **Changes** is the number of configuration changes that occurred for the resource between the selected time period and the previous block.
6. Click to navigate to the **CloudTrail events** section. The number that follows **Events** is the number of API events that occurred for the resource between the selected time period and the previous block. You can see the API events that AWS CloudTrail logged for the last 90 days. CloudTrail events that occurred prior to the last 90 days can't be viewed in the timeline.

   For more information, see Viewing Events with CloudTrail API Activity History in the *AWS CloudTrail User Guide*.

   Note
   CloudTrail events may not be available for the following reasons:

   - Verify that you have sufficient read permissions for CloudTrail. For more information, see Read-only access (p. 79).
   - There is a service issue and CloudTrail events can't be displayed at this time. Try refreshing the page.
   - You don't have a CloudTrail trail in this region or your trail is not enabled for logging. For more information, see Creating a Trail for the First Time in the *AWS CloudTrail User Guide*.

Timeline Navigation Tips for the Selected Resource

The following are tips for using the timeline to view information about the selected resource.

- Use the arrows at either end of the timeline to view the timeline blocks for configuration items that were recorded in other time periods.
- Choose **Configuration Details** to view the description of the selected resource.
- Choose **Relationships** to see a list of supported resources in the account that are related to the selected resource. If the **Relationships** section doesn't expand, the selected resource was not related to another resource that was in your account during the selected time period.

  For more information, see Resource Relationship (p. 4).
- If changes are indicated for the selected time period, choose **Changes** to view the configuration changes made to the resource. The **Changes** section also lists the relationship changes that occurred as a result of configuration changes.
- Choose **CloudTrail events** to view information about API calls that involve the resource, such as the event time, the user name, and the event name. For example, if AWS Config is recording IAM resource types, and an IAM role is updated, you can view the event to see the `UpdateRole` in the **Event name** column.
- In the **View event** column, you can also choose the **CloudTrail** link to view more information about the event in the CloudTrail console. You must create a trail and enable logging for CloudTrail to view the events in the AWS Config timeline.
- Choose **View Details** to view the configuration information in text or JSON format. Click the arrows in the details window to see additional details.

For more information about the entries in the details window, see Components of a Configuration Item (p. 30).

- Choose **Manage resources** to go to the console for the selected resource. If you make a change to the resource, go back to the AWS Config console and choose **Now** to see the changes. It can take up to 10 minutes to refresh the details page for the resource.

  The console also provides details pages for supported resources that you do not include in the list of resources that AWS Config records. The information on these details pages is limited and ongoing configuration changes are not shown.

Viewing Configuration Details (AWS CLI)

The configuration items that AWS Config records are delivered to the specified delivery channel on demand as a configuration snapshot and as a configuration stream. You can use the AWS CLI to view history of configuration items for each resource.

Viewing Configuration History

Type the `get-resource-config-history` command and specify the resource type and the resource ID, for example:

```
$ aws configservice get-resource-config-history --resource-type AWS::EC2::SecurityGroup --
resource-id sg-6fbb3807
{
    "configurationItems": [
        {
            "configurationItemCaptureTime": 1414708529.9219999,
            "relationships": [
                {
                    "resourceType": "AWS::EC2::Instance",
                    "resourceId": "i-7a3b232a",
                    "relationshipName": "Is associated with Instance"
                },
                {
                    "resourceType": "AWS::EC2::Instance",
                    "resourceId": "i-8b6eb2ab",
                    "relationshipName": "Is associated with Instance"
                },
                {
                    "resourceType": "AWS::EC2::Instance",
                    "resourceId": "i-c478efe5",
                    "relationshipName": "Is associated with Instance"
                },
                {
                    "resourceType": "AWS::EC2::Instance",
                    "resourceId": "i-e4cbe38d",
                    "relationshipName": "Is associated with Instance"
                }
            ],
            "availabilityZone": "Not Applicable",
            "tags": {},
            "resourceType": "AWS::EC2::SecurityGroup",
            "resourceId": "sg-6fbb3807",
            "configurationStateId": "1",
            "relatedEvents": [],
            "arn": "arn:aws:ec2:us-east-2:012345678912:security-group/default",
            "version": "1.0",
            "configurationItemMD5Hash": "860aa81fc3869e186b2ee00bc638a01a",
            "configuration": "{\"ownerId\":\"605053316265\",\"groupName\":\"default
\",\"groupId\":\"sg-6fbb3807\",\"description\":\"default group\",\"ipPermissions\":
```

```
[{\"ipProtocol\":\"tcp\",\"fromPort\":80,\"toPort\":80,\"userIdGroupPairs\":[{\"userId
\":\"amazon-elb\",\"groupName\":\"amazon-elb-sg\",\"groupId\":\"sg-843f59ed\"}],
\"ipRanges\":[\"0.0.0.0/0\"]},{\"ipProtocol\":\"tcp\",\"fromPort\":0,\"toPort\":65535,
\"userIdGroupPairs\":[{\"userId\":\"605053316265\",\"groupName\":\"default\",\"groupId
\":\"sg-6fbb3807\"}],\"ipRanges\":[]},{\"ipProtocol\":\"udp\",\"fromPort\":0,\"toPort
\":65535,\"userIdGroupPairs\":[{\"userId\":\"605053316265\",\"groupName\":\"default\",
\"groupId\":\"sg-6fbb3807\"}],\"ipRanges\":[]},{\"ipProtocol\":\"icmp\",\"fromPort\":-1,
\"toPort\":-1,\"userIdGroupPairs\":[{\"userId\":\"605053316265\",\"groupName\":\"default
\",\"groupId\":\"sg-6fbb3807\"}],\"ipRanges\":[]},{\"ipProtocol\":\"tcp\",\"fromPort
\":1433,\"toPort\":1433,\"userIdGroupPairs\":[],\"ipRanges\":[\"0.0.0.0/0\"]},{\"ipProtocol
\":\"tcp\",\"fromPort\":3389,\"toPort\":3389,\"userIdGroupPairs\":[],\"ipRanges\":
[\"207.171.160.0/19\"]}],\"ipPermissionsEgress\":[],\"vpcId\":null,\"tags\":[]}",
            "configurationItemStatus": "ResourceDiscovered",
            "accountId": "605053316265"
        }
    ],
    "nextToken":
     ..........
```

For detailed explanation of the response fields, see Components of a Configuration Item (p. 30) and AWS Config Supported AWS Resource Types and Resource Relationships (p. 9).

Example Amazon EBS Configuration History from AWS Config

AWS Config generates a set of files that each represent a resource type and lists all configuration changes for the resources of that type that AWS Config is recording. AWS Config exports this resource-centric configuration history as an object in the Amazon S3 bucket that you specified when you enabled AWS Config. The configuration history file for each resource type contains the changes that were detected for the resources of that type since the last history file was delivered. The history files are typically delivered every six hours.

The following is an example of the contents of the Amazon S3 object that describes the configuration history of all the Amazon Elastic Block Store volumes in the current region for your AWS account. The volumes in this account include `vol-ce676ccc` and `vol-cia007c`. Volume `vol-ce676ccc` had two configuration changes since the previous history file was delivered while volume `vol-cia007c` had one change.

```
{
    "fileVersion": "1.0",
    "requestId": "asudf8ow-4e34-4f32-afeb-0ace5bf3trye",
    "configurationItems": [
        {
            "snapshotVersion": "1.0",
            "resourceId": "vol-ce676ccc",
            "arn": "arn:aws:us-west-2b:123456789012:volume/vol-ce676ccc",
            "accountId": "12345678910",
            "configurationItemCaptureTime": "2014-03-07T23:47:08.918Z",
            "configurationStateID": "3e660fdf-4e34-4f32-afeb-0ace5bf3d63a",
            "configurationItemStatus": "OK",
            "relatedEvents": [
                "06c12a39-eb35-11de-ae07-adb69edbb1e4",
                "c376e30d-71a2-4694-89b7-a5a04ad92281"
            ],
            "availibilityZone": "us-west-2b",
            "resourceType": "AWS::EC2::Volume",
            "resourceCreationTime": "2014-02-27T21:43:53.885Z",
            "tags": {},
            "relationships": [
                {
                    "resourceId": "i-344c463d",
                    "resourceType": "AWS::EC2::Instance",
                    "name": "Attached to Instance"
                }
            ],
            "configuration": {
                "volumeId": "vol-ce676ccc",
                "size": 1,
                "snapshotId": "",
                "availabilityZone": "us-west-2b",
                "state": "in-use",
                "createTime": "2014-02-27T21:43:53.0885+0000",
                "attachments": [
                    {
                        "volumeId": "vol-ce676ccc",
                        "instanceId": "i-344c463d",
                        "device": "/dev/sdf",
                        "state": "attached",
                        "attachTime": "2014-03-07T23:46:28.0000+0000",
                        "deleteOnTermination": false
                    }
                ],
                "tags": [
                    {
                        "tagName": "environment",
                        "tagValue": "PROD"
                    },
                    {
                        "tagName": "name",
                        "tagValue": "DataVolume1"
                    }
                ],
                "volumeType": "standard"
            }
        },
        {
            "configurationItemVersion": "1.0",
            "resourceId": "vol-ce676ccc",
            "arn": "arn:aws:us-west-2b:123456789012:volume/vol-ce676ccc",
            "accountId": "12345678910",
            "configurationItemCaptureTime": "2014-03-07T21:47:08.918Z",
            "configurationItemState": "3e660fdf-4e34-4f32-sseb-0ace5bf3d63a",
            "configurationItemStatus": "OK",
            "relatedEvents": [
                "06c12a39-eb35-11de-ae07-ad229edbb1e4",
                "c376e30d-71a2-4694-89b7-a5a04w292281"
            ],
            "availibilityZone": "us-west-2b",
            "resourceType": "AWS::EC2::Volume",
            "resourceCreationTime": "2014-02-27T21:43:53.885Z",
            "tags": {},
            "relationships": [
                {
                    "resourceId": "i-344c463d",
                    "resourceType": "AWS::EC2::Instance",
                    "name": "Attached to Instance"
                }
            ],
            "configuration": {
                "volumeId": "vol-ce676ccc",
                "size": 1,
                "snapshotId": "",
                "availabilityZone": "us-west-2b",
                "state": "in-use",
                "createTime": "2014-02-27T21:43:53.0885+0000",
                "attachments": [
                    {
                        "volumeId": "vol-ce676ccc",
                        "instanceId": "i-344c463d",
                        "device": "/dev/sdf",
                        "state": "attached",
                        "attachTime": "2014-03-07T23:46:28.0000+0000",
                        "deleteOnTermination": false
                    }
                ],
                "tags": [
                    {
                        "tagName": "environment",
                        "tagValue": "PROD"
                    },
                    {
                        "tagName": "name",
                        "tagValue": "DataVolume1"
                    }
                ],
                "volumeType": "standard"
            }
        },
        {
            "configurationItemVersion": "1.0",
            "resourceId": "vol-cia007c",
            "arn": "arn:aws:us-west-2b:123456789012:volume/vol-cia007c",
            "accountId": "12345678910",
            "configurationItemCaptureTime": "2014-03-07T20:47:08.918Z",
            "configurationItemState": "3e660fdf-4e34-4f88-sseb-0ace5bf3d63a",
            "configurationItemStatus": "OK",
            "relatedEvents": [
                "06c12a39-eb35-11de-ae07-adjhk8edbb1e4",
                "c376e30d-71a2-4694-89b7-a5a67u292281"
            ],
            "availibilityZone": "us-west-2b",
            "resourceType": "AWS::EC2::Volume",
            "resourceCreationTime": "2014-02-27T20:43:53.885Z",
            "tags": {},
            "relationships": [
                {
                    "resourceId": "i-344e563d",
                    "resourceType": "AWS::EC2::Instance",
                    "name": "Attached to Instance"
                }
            ],
            "configuration": {
                "volumeId": "vol-cia007c",
                "size": 1,
                "snapshotId": "",
                "availabilityZone": "us-west-2b",
                "state": "in-use",
                "createTime": "2014-02-27T20:43:53.0885+0000",
                "attachments": [
                    {
                        "volumeId": "vol-cia007c",
                        "instanceId": "i-344e563d",
                        "device": "/dev/sdf",
                        "state": "attached",
                        "attachTime": "2014-03-07T23:46:28.0000+0000",
                        "deleteOnTermination": false
                    }
                ],
                "tags": [
                    {
                        "tagName": "environment",
                        "tagValue": "PROD"
                    },
                    {
                        "tagName": "name",
                        "tagValue": "DataVolume2"
                    }
                ],
                "volumeType": "standard"
            }
        }
    ]
}
```

Viewing Compliance History for Resources as Evaluated by AWS Config Rules

AWS Config supports storing compliance state changes of resources as evaluated by AWS Config Rules. The resource compliance history is presented in the form of a timeline. The timeline captures changes as `ConfigurationItems` over a period of time for a specific resource. The Compliance timeline is available in the AWS Config console adjacent to the Configuration timeline.

You can opt in or opt out to record all resource types in AWS Config. If you have opted to record all resource types, AWS Config will automatically begin to record the resource compliance history as evaluated by AWS Config Rules. You can select all the resources or specific types of resources for which you want AWS Config to record configuration changes. By default, AWS Config records the configuration changes for all supported resources.

Topics

- Recording Resource Types in the AWS Console (p. 39)
- Viewing Compliance Timeline Using Resources (p. 39)
- Viewing Compliance Timeline Using Rules (p. 41)

Recording Resource Types in the AWS Console

On the **Settings** page, for **Resource types to record**, specify the AWS resource types you want AWS Config to record:

- **All resources** – AWS Config records all supported resources with the following options:
  - **Record all resources supported in this region** – AWS Config records configuration changes for every supported type of regional resource. When AWS Config adds support for a new resource type, AWS Config automatically starts recording resources of that type.
  - **Include global resources** – AWS Config includes supported types of global resources with the resources that it records (for example, IAM resources). When AWS Config adds support for a new global resource type, AWS Config automatically starts recording resources of that type.
- **Specific types** – AWS Config records configuration changes for only the AWS resource types that you specify.

Viewing Compliance Timeline Using Resources

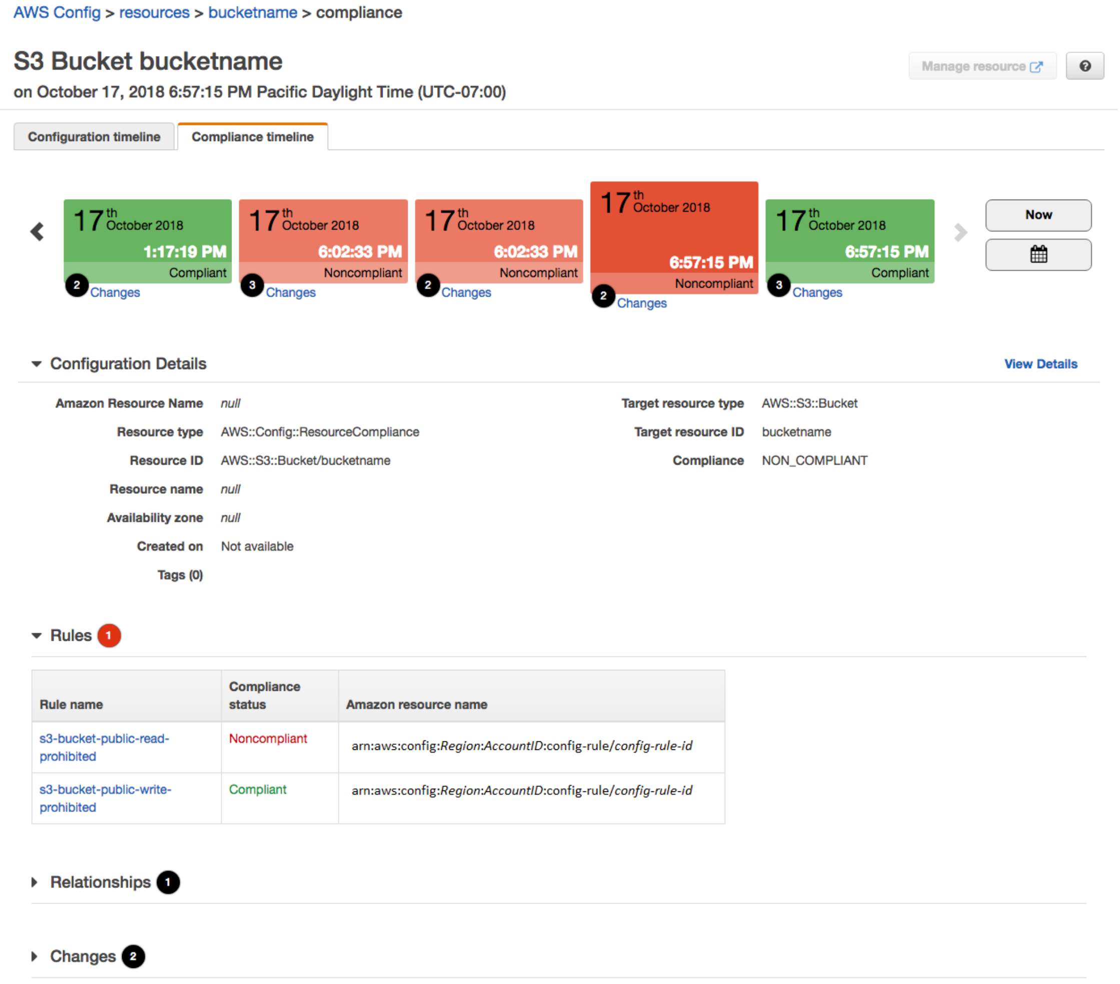
Access the compliance timeline by selecting a specific resource from the Resource inventory page.

1. Select the **Resources** from the left navigation.
2. On the Resource inventory page, select all the exisiting resources from the drop-down and if appropriate, select include deleted resources.
3. Click **Lookup**.

The table displays the resource identifier for the resource type and the resource compliance status for that resource. The resource identifier might be a resource ID or a resource name, if applicable.

4. Select the resource from the resource identifier column.
5. Select the **Compliance timeline** from the Resource actions drop-down.

   The compliance timeline is displayed.


AWS Config > resources > bucketname > compliance
Manage resource
Configuration timeline
Compliance timeline
17th October 2018 1:17:19 PM Compliant 2 Changes
17th October 2018 6:02:33 PM Noncompliant 3 Changes
17th October 2018 6:02:33 PM Noncompliant 2 Changes
17th October 2018 6:57:15 PM Noncompliant 2 Changes
17th October 2018 6:57:15 PM Compliant 3 Changes
Now
View Details
Relationships 1
Changes 2

S3 Bucket bucketname

on October 17, 2018 6:57:15 PM Pacific Daylight Time (UTC-07:00)

Configuration Details

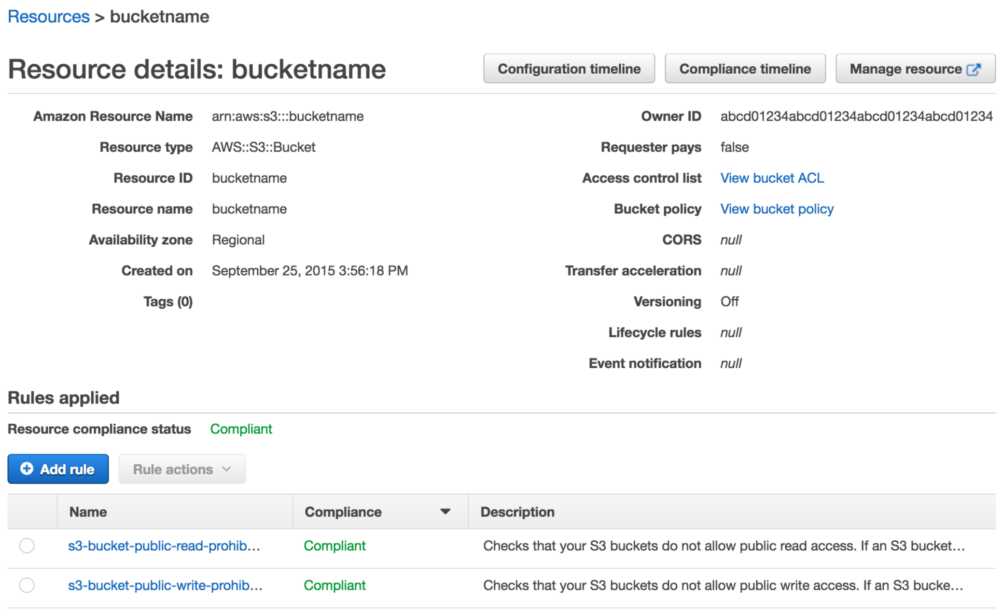
Amazon Resource Name	*null*	Target resource type	AWS::S3::Bucket
Resource type	AWS::Config::ResourceCompliance	Target resource ID	bucketname
Resource ID	AWS::S3::Bucket/bucketname	Compliance	NON_COMPLIANT
Resource name	*null*		
Availability zone	*null*		
Created on	Not available		
Tags (0)			

Rules 1

Rule name	Compliance status	Amazon resource name
s3-bucket-public-read-prohibited	Noncompliant	arn:aws:config:*Region*:*AccountID*:config-rule/*config-rule-id*
s3-bucket-public-write-prohibited	Compliant	arn:aws:config:*Region*:*AccountID*:config-rule/*config-rule-id*

Note

Alternatively, on the Resource inventory page, you can directly click the resource name. The Resource details page is displayed. To access the compliance timeline from the resource details page, click the **Compliance timeline** button.



Resource details: bucketname

Amazon Resource Name	arn:aws:s3:::bucketname	Owner ID	abcd01234abcd01234abcd01234abcd01234
Resource type	AWS::S3::Bucket	Requester pays	false
Resource ID	bucketname	Access control list	View bucket ACL
Resource name	bucketname	Bucket policy	View bucket policy
Availability zone	Regional	CORS	*null*
Created on	September 25, 2015 3:56:18 PM	Transfer acceleration	*null*
Tags (0)		Versioning	Off
		Lifecycle rules	*null*
		Event notification	*null*

Rules applied

Resource compliance status Compliant

	Name	Compliance	Description
○	s3-bucket-public-read-prohib...	Compliant	Checks that your S3 buckets do not allow public read access. If an S3 bucket...
○	s3-bucket-public-write-prohib...	Compliant	Checks that your S3 buckets do not allow public write access. If an S3 bucke...

Viewing Compliance Timeline Using Rules

Access the compliance timeline by selecting a specific rule from the Rule page.

1. Select the **Rules** from the left navigation.
2. On the Rule page, click the name of the rule evaluating your relevant resources. If no rules are displayed on the screen, add rules using the **Add rule** button.
3. On the Rule details page, select the resources from the Resources evaluated table.
4. Select **Compliance timeline** from the Resource actions drop-down. The compliance timeline is displayed.

Delivering Configuration Snapshot to an Amazon S3 Bucket

AWS Config delivers configuration items of the AWS resources that AWS Config is recording to the Amazon S3 bucket that you specified when you configured your delivery channel.

Topics

Delivering Configuration Snapshot

AWS Config generates configuration snapshots when you invoke the DeliverConfigSnapshot action or you run the AWS CLI `deliver-config-snapshot` command. AWS Config stores configuration snapshots in the Amazon S3 bucket that you specified when you enabled AWS Config.

Type the `deliver-config-snapshot` command by specifying the name assigned by AWS Config when you configured your delivery channel, for example:

```
$ aws configservice deliver-config-snapshot --delivery-channel-name default
{
    "configSnapshotId": "94ccff53-83be-42d9-996f-b4624b3c1a55"
}
```

Example Configuration Snapshot from AWS Config

The following is an example of the information that AWS Config includes in a configuration snapshot. The snapshot describes the configuration for the resources that AWS Config is recording in the current region for your AWS account, and it describes the relationships between these resources.

> **Note**
> The configuration snapshot can include references to resources types and resource IDs that are not supported.

```
{
    "fileVersion": "1.0",
    "requestId": "asudf8ow-4e34-4f32-afeb-0ace5bf3trye",
    "configurationItems": [
        {
            "configurationItemVersion": "1.0",
            "resourceId": "vol-ce676ccc",
            "arn": "arn:aws:us-west-2b:123456789012:volume/vol-ce676ccc",
            "accountId": "12345678910",
            "configurationItemCaptureTime": "2014-03-07T23:47:08.918Z",
            "configurationStateID": "3e660fdf-4e34-4f32-afeb-0ace5bf3d63a",
            "configurationItemStatus": "OK",
            "relatedEvents": [
                "06c12a39-eb35-11de-ae07-adb69edbb1e4",
                "c376e30d-71a2-4694-89b7-a5a04ad92281"
            ],
            "availibilityZone": "us-west-2b",
            "resourceType": "AWS::EC2::Volume",
            "resourceCreationTime": "2014-02-27T21:43:53.885Z",
            "tags": {},
            "relationships": [
                {
                    "resourceId": "i-344c463d",
                    "resourceType": "AWS::EC2::Instance",
                    "name": "Attached to Instance"
                }
            ],
            "configuration": {
                "volumeId": "vol-ce676ccc",
                "size": 1,
                "snapshotId": "",
                "availabilityZone": "us-west-2b",
                "state": "in-use",
                "createTime": "2014-02-27T21:43:53.0885+0000",
                "attachments": [
                    {
                        "volumeId": "vol-ce676ccc",
                        "instanceId": "i-344c463d",
                        "device": "/dev/sdf",
                        "state": "attached",
                        "attachTime": "2014-03-07T23:46:28.0000+0000",
                        "deleteOnTermination": false
                    }
                ],
                "tags": [
                    {
                        "tagName": "environment",
                        "tagValue": "PROD"
                    },
                    {
                        "tagName": "name",
                        "tagValue": "DataVolume1"
                    }
                ],
                "volumeType": "standard"
            }
        },
        {
            "configurationItemVersion": "1.0",
            "resourceId": "i-344c463d",
            "accountId": "12345678910",
            "arn": "arn:aws:ec2:us-west-2b:123456789012:instance/i-344c463d",
            "configurationItemCaptureTime": "2014-03-07T23:47:09.523Z",
            "configurationStateID": "cdb571fa-ce7a-4ec5-8914-0320466a355e",
            "configurationItemStatus": "OK",
            "relatedEvents": [
                "06c12a39-eb35-11de-ae07-adb69edbb1e4",
                "c376e30d-71a2-4694-89b7-a5a04ad92281"
            ],
            "availibilityZone": "us-west-2b",
            "resourceType": "AWS::EC2::Instance",
            "resourceCreationTime": "2014-02-26T22:56:35.000Z",
            "tags": {
                "Name": "integ-test-1",
                "examplename": "examplevalue"
            },
            "relationships": [
                {
                    "resourceId": "vol-ce676ccc",
                    "resourceType": "AWS::EC2::Volume",
                    "name": "Attached Volume"
                },
                {
                    "resourceId": "vol-ef0e06ed",
                    "resourceType": "AWS::EC2::Volume",
                    "name": "Attached Volume",
                    "direction": "OUT"
                },
                {
                    "resourceId": "subnet-47b4cf2c",
                    "resourceType": "AWS::EC2::SUBNET",
                    "name": "Is contained in Subnet",
                    "direction": "IN"
                }
            ],
            "configuration": {
                "instanceId": "i-344c463d",
                "imageId": "ami-ccf297fc",
                "state": {
                    "code": 16,
                    "name": "running"
                },
                "privateDnsName": "ip-172-31-21-63.us-west-2.compute.internal",
                "publicDnsName": "ec2-54-218-4-189.us-west-2.compute.amazonaws.com",
                "stateTransitionReason": "",
                "keyName": "configDemo",
                "amiLaunchIndex": 0,
                "productCodes": [],
                "instanceType": "t1.micro",
                "launchTime": "2014-02-26T22:56:35.0000+0000",
                "placement": {
                    "availabilityZone": "us-west-2b",
                    "groupName": "",
                    "tenancy": "default"
                },
                "kernelId": "aki-fc8f11cc",
                "monitoring": {
                    "state": "disabled"
                },
                "subnetId": "subnet-47b4cf2c",
                "vpcId": "vpc-41b4cf2a",
                "privateIpAddress": "172.31.21.63",
                "publicIpAddress": "54.218.4.189",
                "architecture": "x86_64",
                "rootDeviceType": "ebs",
                "rootDeviceName": "/dev/sda1",
                "blockDeviceMappings": [
                    {
                        "deviceName": "/dev/sda1",
                        "ebs": {
                            "volumeId": "vol-ef0e06ed",
                            "status": "attached",
                            "attachTime": "2014-02-26T22:56:38.0000+0000",
                            "deleteOnTermination": true
                        }
                    },
                    {
                        "deviceName": "/dev/sdf",
                        "ebs": {
                            "volumeId": "vol-ce676ccc",
                            "status": "attached",
                            "attachTime": "2014-03-07T23:46:28.0000+0000",
                            "deleteOnTermination": false
                        }
                    }
                ],
                "virtualizationType": "paravirtual",
                "clientToken": "aBCDe123456",
                "tags": [
                    {
                        "key": "Name",
                        "value": "integ-test-1"
                    },
                    {
                        "key": "examplekey",
                        "value": "examplevalue"
                    }
                ],
                "securityGroups": [
                    {
                        "groupName": "launch-wizard-2",
                        "groupId": "sg-892adfec"
                    }
                ],
                "sourceDestCheck": true,
                "hypervisor": "xen",
                "networkInterfaces": [
                    {
                        "networkInterfaceId": "eni-55c03d22",
                        "subnetId": "subnet-47b4cf2c",
                        "vpcId": "vpc-41b4cf2a",
                        "description": "",
                        "ownerId": "12345678910",
                        "status": "in-use",
                        "privateIpAddress": "172.31.21.63",
                        "privateDnsName": "ip-172-31-21-63.us-west-2.compute.internal",
                        "sourceDestCheck": true,
                        "groups": [
                            {
                                "groupName": "launch-wizard-2",
                                "groupId": "sg-892adfec"
                            }
                        ],
                        "attachment": {
                            "attachmentId": "eni-attach-bf90c489",
                            "deviceIndex": 0,
                            "status": "attached",
                            "attachTime": "2014-02-26T22:56:35.0000+0000",
                            "deleteOnTermination": true
                        },
                        "association": {
                            "publicIp": "54.218.4.189",
                            "publicDnsName": "ec2-54-218-4-189.us-
west-2.compute.amazonaws.com",
                            "ipOwnerId": "amazon"
                        },
                        "privateIpAddresses": [
                            {
                                "privateIpAddress": "172.31.21.63",
                                "privateDnsName": "ip-172-31-21-63.us-
west-2.compute.internal",
                                "primary": true,
                                "association": {
                                    "publicIp": "54.218.4.189",
                                    "publicDnsName": "ec2-54-218-4-189.us-
west-2.compute.amazonaws.com",
                                    "ipOwnerId": "amazon"
                                }
                            }
                        ]
                    }
                ],
                "ebsOptimized": false
            }
        }
    ]
}
```

The next step is to verify that configuration snapshot was delivered successfully to the delivery channel.

Verifying Delivery Status

Type the describe-delivery-channel-status command to verify that the AWS Config has started delivering the configurations to the specified delivery channel, for example:

```
$ aws configservice describe-delivery-channel-status
{
    "DeliveryChannelsStatus": [
        {
            "configStreamDeliveryInfo": {
                "lastStatusChangeTime": 1415138614.125,
                "lastStatus": "SUCCESS"
            },
            "configHistoryDeliveryInfo": {
                "lastSuccessfulTime": 1415148744.267,
                "lastStatus": "SUCCESS",
                "lastAttemptTime": 1415148744.267
            },
            "configSnapshotDeliveryInfo": {
                "lastSuccessfulTime": 1415333113.4159999,
                "lastStatus": "SUCCESS",
                "lastAttemptTime": 1415333113.4159999
            },
            "name": "default"
        }
    ]
}
```

The response lists the status of all the three delivery formats that AWS Config uses to deliver configurations to your bucket and topic.

Take a look at the `lastSuccessfulTime` field in `configSnapshotDeliveryInfo`. The time should match the time you last requested the delivery of the configuration snapshot.

> **Note**
> AWS Config uses the UTC format (GMT-08:00) to record the time.

Viewing Configuration Snapshot in Amazon S3 bucket

1. Sign in to the AWS Management Console and open the Amazon S3 console at https://console.aws.amazon.com/s3/.
2. In the Amazon S3 console **All Buckets** list, click the name of your Amazon S3 bucket.
3. Click through the nested folders in your bucket until you see the `ConfigSnapshot` object with a snapshot ID that matches with the ID returned by the command. Download and open the object to view the configuration snapshot.

   The S3 bucket also contains an empty file named `ConfigWritabilityCheckFile`. AWS Config creates this file to verify that the service can successfully write to the S3 bucket.

Managing AWS Config

At any time, you can change the settings for your IAM role and modify or delete your delivery channel (that is, the Amazon Simple Storage Service bucket and the Amazon Simple Notification Service topic). You can start or stop the configuration recorder associated with your account, and you can customize which types of resources are recorded.

Topics

Managing the Delivery Channel

As AWS Config continually records the changes that occur to your AWS resources, it sends notifications and updated configuration states through the *delivery channel*. You can manage the delivery channel to control where AWS Config sends configuration updates.

You can have only one delivery channel per region per AWS account, and the delivery channel is required to use AWS Config.

Updating the Delivery Channel

When you update the delivery channel, you can set the following options:

- The Amazon S3 bucket to which AWS Config sends configuration snapshots and configuration history files.
- How often AWS Config delivers configuration snapshots to your Amazon S3 bucket.
- The Amazon SNS topic to which AWS Config sends notifications about configuration changes.

To update the delivery channel (console)

- You can use the AWS Config console to set the Amazon S3 bucket and the Amazon SNS topic for your delivery channel. For steps to manage these settings, see Setting Up AWS Config with the Console (p. 19).

  The console does not provide options to rename the delivery channel, set the frequency for configuration snapshots, or delete the delivery channel. To do these tasks, you must use the AWS CLI, the AWS Config API, or one of the AWS SDKs.

To update the delivery channel (AWS CLI)

1. Use the `put-delivery-channel` command:

```
$ aws configservice put-delivery-channel --delivery-channel file://deliveryChannel.json
```

   The deliveryChannel.json file specifies the delivery channel attributes:

```
{
    "name": "default",
    "s3BucketName": "config-bucket-123456789012",
    "snsTopicARN": "arn:aws:sns:us-east-2:123456789012:config-topic",
    "configSnapshotDeliveryProperties": {
        "deliveryFrequency": "Twelve_Hours"
    }
}
```

   This example sets the following attributes:

   - `name` – The name of the delivery channel. By default, AWS Config assigns the name `default` to a new delivery channel.

     You cannot update the delivery channel name with the `put-delivery-channel` command. For the steps to change the name, see Renaming the Delivery Channel (p. 48).
   - `s3BucketName` – The name of the Amazon S3 bucket to which AWS Config delivers configuration snapshots and configuration history files.

     If you specify a bucket that belongs to another AWS account, that bucket must have policies that grant access permissions to AWS Config. For more information, see Permissions for the Amazon S3 Bucket (p. 89).
   - `snsTopicARN` – The Amazon Resource Name (ARN) of the Amazon SNS topic to which AWS Config sends notifications about configuration changes.

     If you choose a topic from another account, that topic must have policies that grant access permissions to AWS Config. For more information, see Permissions for the Amazon SNS Topic (p. 91).

- `configSnapshotDeliveryProperties` – Contains the `deliveryFrequency` attribute, which sets how often AWS Config delivers configuration snapshots.

2. (Optional) You can use the `describe-delivery-channels` command to verify that the delivery channel settings are updated:

```
$ aws configservice describe-delivery-channels
{
    "DeliveryChannels": [
        {
            "configSnapshotDeliveryProperties": {
                "deliveryFrequency": "Twelve_Hours"
            },
            "snsTopicARN": "arn:aws:sns:us-east-2:123456789012:config-topic",
            "name": "default",
            "s3BucketName": "config-bucket-123456789012"
        }
    ]
}
```

Renaming the Delivery Channel

To change the delivery channel name, you must delete it and create a new delivery channel with the desired name. Before you can delete the delivery channel, you must temporarily stop the configuration recorder.

The AWS Config console does not provide the option to delete the delivery channel, so you must use the AWS CLI, the AWS Config API, or one of the AWS SDKs.

To rename the delivery channel (AWS CLI)

1. Use the `stop-configuration-recorder` command to stop the configuration recorder:

```
$ aws configservice stop-configuration-recorder --configuration-recorder-name configRecorderName
```

2. Use the `describe-delivery-channels` command, and take note of your delivery channel's attributes:

```
$ aws configservice describe-delivery-channels
{
    "DeliveryChannels": [
        {
            "configSnapshotDeliveryProperties": {
                "deliveryFrequency": "Twelve_Hours"
            },
            "snsTopicARN": "arn:aws:sns:us-east-2:123456789012:config-topic",
            "name": "default",
            "s3BucketName": "config-bucket-123456789012"
        }
    ]
}
```

3. Use the `delete-delivery-channel` command to delete the delivery channel:

```
$ aws configservice delete-delivery-channel --delivery-channel-name default
```

4. Use the `put-delivery-channel` command to create a delivery channel with the desired name:

```
$ aws configservice put-delivery-channel --delivery-channel file://deliveryChannel.json
```

The deliveryChannel.json file specifies the delivery channel attributes:

```
{
    "name": "myCustomDeliveryChannelName",
    "s3BucketName": "config-bucket-123456789012",
    "snsTopicARN": "arn:aws:sns:us-east-2:123456789012:config-topic",
    "configSnapshotDeliveryProperties": {
        "deliveryFrequency": "Twelve_Hours"
    }
}
```

5. Use the `start-configuration-recorder` command to resume recording:

```
$ aws configservice start-configuration-recorder --configuration-recorder-
name configRecorderName
```

Updating the IAM Role Assigned to AWS Config

You can update the IAM role assumed by AWS Config any time. Before you update the IAM role, ensure that you have created a new role to replace the old one. You must attach policies to the new role that grant permissions to AWS Config to record configurations and deliver them to your delivery channel. In addition, make sure to copy the Amazon Resource Name (ARN) of your new IAM role. You will need it to update the IAM role. For information about creating an IAM role and attaching the required policies to the IAM role, see Creating an IAM Role (p. 23).

> **Note**
> To find the ARN of an existing IAM role, go to the IAM console at https://console.aws.amazon.com/iam/. Choose **Roles** in the navigation pane. Then choose the name of the desired role and find the ARN at the top of the **Summary** page.

Updating the IAM Role

You can update your IAM role using the AWS Management Console or the AWS CLI.

To update the IAM role in a region where rules are supported (console)

If you are using AWS Config in a region that supports AWS Config rules, complete the following steps. For the list of supported regions, see AWS Config Regions and Endpoints in the *Amazon Web Services General Reference*.

1. Sign in to the AWS Management Console and open the AWS Config console at https://console.aws.amazon.com/config/.
2. Choose **Settings** in the navigation pane.
3. In the **AWS Config role**, section, choose the IAM role:

    - **Create a role** – AWS Config creates a role that has the required permissions. For **Role name**, you can customize the name that AWS Config creates.
    - **Choose a role from your account** – For **Role name**, choose an IAM role in your account. AWS Config will attach the required policies. For more information, see Permissions for the IAM Role Assigned to AWS Config (p. 86).

        > **Note**
        > Check the box if you want to use the IAM role as it. AWS Config will not attach policies to the role.

4. Choose **Save**.

To update the IAM role in a region where rules are not supported (console)

1. Sign in to the AWS Management Console and open the AWS Config console at https://console.aws.amazon.com/config/.
2. On the **Resource inventory** page, choose the settings icon (⚙).
3. Choose **Continue**.
4. In the **AWS Config is requesting permissions to read your resources' configuration** page, choose **View Details**.
5. In the **Role Summary** section, choose the IAM role:
   - If you want to create a role, for **IAM Role**, choose **Create a new IAM Role**. Then type a name for **Role Name**.
   - If you want to use an existing role, select it for **IAM Role**. Then, for **Policy Name**, select an available policy or create one by selecting **Create a new Role Policy**.
6. Choose **Allow**.

To update the IAM role (AWS CLI)

- Use the `put-configuration-recorder` command and specify the Amazon Resource Name (ARN) of the new role:

```
$ aws configservice put-configuration-recorder --configuration-recorder
 name=configRecorderName,roleARN=arn:aws:iam::012345678912:role/myConfigRole
```

Managing the Configuration Recorder

AWS Config uses the *configuration recorder* to detect changes in your resource configurations and capture these changes as configuration items. You must create a configuration recorder before AWS Config can track your resource configurations.

If you set up AWS Config by using the console or the AWS CLI, AWS Config automatically creates and then starts the configuration recorder for you. For more information, see Getting Started With AWS Config (p. 19).

By default, the configuration recorder records all supported resources in the region where AWS Config is running. You can create a customized configuration recorder that records only the resource types that you specify. For more information, see Selecting Which Resources AWS Config Records (p. 52).

You are charged service usage fees when AWS Config starts recording configurations. For pricing information, see AWS Config Pricing. To control costs, you can stop recording by stopping the configuration recorder. After you stop recording, you can continue to access the configuration information that was already recorded. You will not be charged AWS Config usage fees until you resume recording.

When you start the configuration recorder, AWS Config takes an inventory of all AWS resources in your account.

Managing the Configuration Recorder (Console)

You can use the AWS Config console to stop or start the configuration recorder.

To stop or start the configuration recorder

1. Sign in to the AWS Management Console and open the AWS Config console at https://console.aws.amazon.com/config/.
2. Choose **Settings** in the navigation pane.
3. Stop or start the configuration recorder:

   - If you want to stop recording, under **Recording is on**, choose **Turn off**. When prompted, choose **Continue**.
   - If you want to start recording, under **Recording is off**, choose **Turn on**. When prompted, choose **Continue**.

Managing the Configuration Recorder (AWS CLI)

You can use the AWS CLI to stop or start the configuration recorder. You can also rename or delete the configuration recorder using the AWS CLI, the AWS Config API, or one of the AWS SDKs. The following steps help you use the AWS CLI.

To stop the configuration recorder

- Use the `stop-configuration-recorder` command:

```
$ aws configservice stop-configuration-recorder --configuration-recorder-
name configRecorderName
```

To start the configuration recorder

- Use the `start-configuration-recorder` command:

```
$ aws configservice start-configuration-recorder --configuration-recorder-
name configRecorderName
```

To rename the configuration recorder

To change the configuration recorder name, you must delete it and create a new configuration recorder with the desired name.

1. Use the `describe-configuration-recorders` command to look up the name of your current configuration recorder:

```
$ aws configservice describe-configuration-recorders
{
    "ConfigurationRecorders": [
        {
            "roleARN": "arn:aws:iam::012345678912:role/myConfigRole",
            "name": "default"
        }
    ]
}
```

2. Use the `delete-configuration-recorder` command to delete your current configuration recorder:

```
$ aws configservice delete-configuration-recorder --configuration-recorder-name default
```

3. Use the `put-configuration-recorder` command to create a configuration recorder with the desired name:

```
$ aws configservice put-configuration-recorder --configuration-recorder
 name=configRecorderName,roleARN=arn:aws:iam::012345678912:role/myConfigRole
```

4. Use the `start-configuration-recorder` command to resume recording:

```
$ aws configservice start-configuration-recorder --configuration-recorder-
name configRecorderName
```

To delete the configuration recorder

- Use the `delete-configuration-recorder` command:

```
$ aws configservice delete-configuration-recorder --configuration-recorder-name default
```

Selecting Which Resources AWS Config Records

AWS Config continuously detects when any resource of a supported type is created, changed, or deleted. AWS Config records these events as configuration items. You can customize AWS Config to record changes for all supported types of resources or for only those types that are relevant to you. To learn which types of resources AWS Config can record, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9).

Recording All Supported Resource Types

By default, AWS Config records the configuration changes for all supported types of *regional resources* that AWS Config discovers in the region in which it is running. Regional resources are tied to a region and can be used only in that region. Examples of regional resources are EC2 instances and EBS volumes.

You can also have AWS Config record supported types of *global resources*. Global resources are not tied to a specific region and can be used in all regions. The global resource types that AWS Config supports are IAM users, groups, roles, and customer managed policies.

> **Important**
> The configuration details for a specific global resource are the same in all regions. If you customize AWS Config in multiple regions to record global resources, AWS Config creates multiple configuration items each time a global resource changes: one configuration item for each region. These configuration items will contain identical data. To prevent duplicate configuration items, you should consider customizing AWS Config in only one region to record global resources, unless you want the configuration items to be available in multiple regions.

Recording Specific Resource Types

If you don't want AWS Config to record the changes for all supported resources, you can customize it to record changes for only specific types. AWS Config records configuration changes for the types of resources that you specify, including the creation and deletion of such resources.

If a resource is not recorded, AWS Config captures only the creation and deletion of that resource, and no other details, at no cost to you. When a nonrecorded resource is created or deleted, AWS Config sends a notification, and it displays the event on the resource details page. The details page for a nonrecorded resource provides null values for most configuration details, and it does not provide information about relationships and configuration changes.

The relationship information that AWS Config provides for recorded resources is not limited because of missing data for nonrecorded resources. If a recorded resource is related to a nonrecorded resource, that relationship is provided in the details page of the recorded resource.

You can stop AWS Config from recording a type of resource any time. After AWS Config stops recording a resource, it retains the configuration information that was previously captured, and you can continue to access this information.

AWS Config rules can be used to evaluate compliance for only those resources that AWS Config records.

Selecting Resources (Console)

You can use the AWS Config console to select the types of resources that AWS Config records.

To select resources

1. Sign in to the AWS Management Console and open the AWS Config console at https://console.aws.amazon.com/config/.
2. Open the **Settings** page:
   - If you are using AWS Config in a region that supports AWS Config rules, choose **Settings** in the navigation pane. For the list of supported regions, see AWS Config Regions and Endpoints in the *Amazon Web Services General Reference*.
   - Otherwise, choose the settings icon (⚙) on the **Resource inventory** page.
3. In the **Resource types to record** section, specify which types of AWS resources you want AWS Config to record:
   - **All resources** – AWS Config records all supported resources with the following options:
     - **Record all resources supported in this region** – AWS Config records configuration changes for every supported type of regional resource. When AWS Config adds support for a new type of regional resource, it automatically starts recording resources of that type.
     - **Include global resources** – AWS Config includes supported types of global resources with the resources that it records (for example, IAM resources). When AWS Config adds support for a new type of global resource, it automatically starts recording resources of that type.
   - **Specific types** – AWS Config records configuration changes for only those types of AWS resources that you specify.
4. Save your changes:
   - If you are using AWS Config in a region that supports AWS Config rules, choose **Save**.
   - Otherwise, choose **Continue**. In the **AWS Config is requesting permissions to read your resources' configuration** page, choose **Allow**.

Selecting Resources (AWS CLI)

You can use the AWS CLI to select the types of resources that you want AWS Config to record. You do this by creating a configuration recorder, which records the types of resources that you specify in a recording group. In the recording group, you specify whether all supported types or specific types of resources are recorded.

To select all supported resources

1. Use the following `put-configuration-recorder` command:

```
$ aws configservice put-configuration-recorder --configuration-recorder
 name=default,roleARN=arn:aws:iam::123456789012:role/config-role --recording-group
 allSupported=true,includeGlobalResourceTypes=true
```

This command uses the following options for the `--recording-group` parameter:

- `allSupported=true` – AWS Config records configuration changes for every supported type of *regional resource*. When AWS Config adds support for a new type of regional resource, it automatically starts recording resources of that type.
- `includeGlobalResourceTypes=true` – AWS Config includes supported types of global resources with the resources that it records. When AWS Config adds support for a new type of global resource, it automatically starts recording resources of that type.

  Before you can set this option to `true`, you must set the `allSupported` option to `true`.

  If you do not want to include global resources, set this option to `false`, or omit it.

2. (Optional) To verify that your configuration recorder has the settings that you want, use the following `describe-configuration-recorders` command:

```
$ aws configservice describe-configuration-recorders
```

The following is an example response:

```
{
    "ConfigurationRecorders": [
        {
            "recordingGroup": {
                "allSupported": true,
                "resourceTypes": [],
                "includeGlobalResourceTypes": true
            },
            "roleARN": "arn:aws:iam::123456789012:role/config-role",
            "name": "default"
        }
    ]
}
```

To select specific types of resources

1. Use the `aws configservice` `put-configuration-recorder` command, and pass one or more resource types through the `--recording-group` option, as shown in the following example:

```
$ aws configservice put-configuration-recorder --configuration-recorder
 name=default,roleARN=arn:aws:iam::012345678912:role/myConfigRole --recording-
group file://recordingGroup.json
```

The `recordingGroup.json` file specifies which types of resources AWS Config will record:

```
{
  "allSupported": false,
  "includeGlobalResourceTypes": false,
  "resourceTypes": [
    "AWS::EC2::EIP",
    "AWS::EC2::Instance",
    "AWS::EC2::NetworkAcl",
    "AWS::EC2::SecurityGroup",
    "AWS::CloudTrail::Trail",
    "AWS::EC2::Volume",
    "AWS::EC2::VPC",
    "AWS::IAM::User",
    "AWS::IAM::Policy"
  ]
}
```

Before you can specify resource types for the `resourceTypes` key, you must set the `allSupported` and `includeGlobalResourceTypes` options to false or omit them.

2. (Optional) To verify that your configuration recorder has the settings that you want, use the following `describe-configuration-recorders` command:

```
$ aws configservice describe-configuration-recorders
```

The following is an example response:

```
{
    "ConfigurationRecorders": [
        {
            "recordingGroup": {
                "allSupported": false,
                "resourceTypes": [
                    "AWS::EC2::EIP",
                    "AWS::EC2::Instance",
                    "AWS::EC2::NetworkAcl",
                    "AWS::EC2::SecurityGroup",
                    "AWS::CloudTrail::Trail",
                    "AWS::EC2::Volume",
                    "AWS::EC2::VPC",
                    "AWS::IAM::User",
                    "AWS::IAM::Policy"
                ],
                "includeGlobalResourceTypes": false
            },
            "roleARN": "arn:aws:iam::123456789012:role/config-role",
            "name": "default"
        }
    ]
}
```

Recording Software Configuration for Managed Instances

You can use AWS Config to record software inventory changes on EC2 instances and on-premises servers. This enables you to see the historical changes to software configuration. For example, when a new Windows update is installed on a managed Windows instance, AWS Config records the changes and then sends the changes to your delivery channels, so that you are notified about the change. With AWS Config, you can see the history of when Windows updates were installed for the managed instance and how they changed over time.

You must complete the following steps to record software configuration changes:

- Turn on recording for the managed instance inventory resource type in AWS Config
- Configure EC2 and on-premises instances as *managed instances*
- Initiate collection of software inventory from your managed instances

You can also use AWS Config rules to monitor software configuration changes and be notified whether the changes are compliant or noncompliant against your rules. For example, if you create a rule that checks whether your managed instances have a specified application, and an instance doesn't have that application installed, AWS Config flags that instance as noncompliant against your rule. For a list of AWS Config managed rules, see List of AWS Config Managed Rules (p. 98).

To enable recording of software configuration changes in AWS Config:

1. Turn on recording for all supported resource types or selectively record the managed instance inventory resource type in AWS Config. For more information, see Selecting Which Resources AWS Config Records (p. 52).
2. Launch an Amazon EC2 instance with an IAM role and the **AmazonEC2RoleforSSM** policy. You may also need to install an SSM Agent. For more information, see Systems Manager Prerequisites in the *Amazon EC2 User Guide for Linux Instances* or Systems Manager Prerequisites in the *Amazon EC2 User Guide for Windows Instances*.
3. Initiate inventory collection as described in Configuring Inventory Collection in the *Amazon EC2 User Guide for Linux Instances*. The procedures are the same for Linux and Windows instances.

   AWS Config can record configuration changes for the following inventory types:

   - **Applications** – A list of applications for managed instances, such as antivirus software.
   - **AWS components** – A list of AWS components for managed instances, such as the AWS CLI and SDKs.
   - **Instance information** – Instance information such as OS name and version, domain, and firewall status.
   - **Network configuration** – Configuration information such as IP address, gateway, and subnet mask.
   - **Windows Updates** – A list of Windows updates for managed instances (Windows instances only).

   > **Note**
   > AWS Config doesn't support recording the custom inventory type at this time.

Inventory collection is one of many Amazon EC2 Systems Manager capabilities, which also includes applying operating system patches and configuring instances at scale. For more information, see Amazon EC2 Systems Manager in the *Amazon EC2 User Guide for Linux Instances* or Amazon EC2 Systems Manager in the *Amazon EC2 User Guide for Windows Instances*.

Monitoring AWS Config Resource Changes by Email

If you have set up AWS Config to stream configuration changes and notifications to an Amazon SNS topic, you can monitor those changes by email. These emails can include configuration history, rule compliance, snapshot information, and change notifications. You can also set up email filters based on the subject line or message body to look for specific changes.

To monitor resource changes by email

1. If you haven't done so already, set up AWS Config to deliver notifications to an Amazon SNS topic. For more information, see Setting Up AWS Config with the Console (p. 19) or Setting Up AWS Config with the AWS CLI (p. 22).
2. Open the Amazon SNS console at https://console.aws.amazon.com/sns/v2/home.
3. In the navigation pane of the Amazon SNS console, choose **Topics**.
4. On the **Topics** page, open the Amazon SNS topic you specified when you set up AWS Config by choosing its name in the **ARN** column.

5. On the **Topic details** page, under **Subscriptions**, choose **Create subscription**.
6. In the **Create subscription** dialog box, for **Protocol**, choose **Email**.
7. For **Endpoint**, type the email address where you want the notifications sent.
8. Choose **Create subscription**.

   Check your email for an email confirmation. In the meantime, the console displays **PendingConfirmation** in the **Subscription ID** column.
9. Open the email from "AWS Notifications" and choose **Confirm subscription**.

   > **Tip**
   > If you want to monitor specific resources or other important changes, you can set up email filters in your email application.

Example Email Format and Filters

If you created an email subscription to your Amazon SNS topic, you can filter the email you receive based on information in the subject line and message body. To create a subscription for an Amazon SNS topic, see Monitoring AWS Config Resource Changes by Email (p. 56).

The subject line of an email looks like the following example:

```
[AWS Config:us-west-2] AWS::EC2::Instance i-12abcd3e Created in Account 123456789012
```

In your email client application, you can set up email filters or rules to watch for specific changes or to organize your notifications. For example, you can organize email notifications by region, resource type, resource name, or AWS account. Email filters can help you manage notifications from multiple accounts or if you have many resources in your account.

The message body of an email subscription created with the **Email** protocol contains information about create, update, and delete events for your AWS resources. The following example shows an email message body created with the **Email** protocol. The notification contains the configuration item change for the resource.

```
View the Timeline for this Resource in AWS Config Management Console:
https://console.aws.amazon.com/config/home?region=us-west-2#/timeline/AWS::
EC2::Instance/i-12abcd3e

New State and Change Record:
----------------------------
{
  "configurationItemDiff": {
    "changedProperties": {},
    "changeType": "CREATE"
  },
  "configurationItem": {
    "configurationItemVersion": "1.0",
    "configurationItemCaptureTime": "2015-03-19T21:20:35.737Z",
    "configurationStateId": 1,
    "relatedEvents": [
      "4f8abc4f-6def-4g42-hi03-46j3b48k0lmn"
    ],
    "awsAccountId": "123456789012",
    "configurationItemStatus": "ResourceDiscovered",
    "resourceId": "i-92aeda5b",
    "ARN": "arn:aws:ec2:us-west-2:123456789012:instance/i-12abcd3e",
    "awsRegion": "us-west-2",
    "availabilityZone": "us-west-2c",
    "configurationStateMd5Hash": "123456789e0f930642026053208e",
    "resourceType": "AWS::EC2::Instance",
    "resourceCreationTime": "2015-03-19T21:13:05.000Z",
    "tags": {},
    "relationships": [
      {
        "resourceId": "abc-1234de56",
        "resourceType": "AWS::EC2::NetworkInterface",
        "name": "Contains NetworkInterface"
      },
      {
        "resourceId": "ab-c12defg3",
        "resourceType": "AWS::EC2::SecurityGroup",
        "name": "Is associated with SecurityGroup"
      },
      {
        "resourceId": "subnet-a1b2c3d4",
        "resourceType": "AWS::EC2::Subnet",
        "name": "Is contained in Subnet"
      },
      {
        "resourceId": "vol-a1bc234d",
        "resourceType": "AWS::EC2::Volume",
        "name": "Is attached to Volume"
      },
      {
        "resourceId": "vpc-a12bc345",
        "resourceType": "AWS::EC2::VPC",
        "name": "Is contained in Vpc"
      }
    ],
    "configuration": {
      "instanceId": "i-12abcd3e",
      "imageId": "ami-123a4567",
      "state": {
        "code": 16,
        "name": "running"
      },
      "privateDnsName": "ip-000-00-0-000.us-west-2.compute.internal",
      "publicDnsName":
"ec2-12-345-678-910.us-west-2.compute.amazonaws.com",
      "stateTransitionReason": "",
      "keyName": null,
      "amiLaunchIndex": 0,
      "productCodes": [],
      "instanceType": "t2.micro",
      "launchTime": "2015-03-19T21:13:05.000Z",
      "placement": {
        "availabilityZone": "us-west-2c",
        "groupName": "",
        "tenancy": "default"
      },
      "kernelId": null,
      "ramdiskId": null,
      "platform": null,
      "monitoring": {
        "state": "disabled"
      },
      "subnetId": "subnet-a1b2c3d4",
      "vpcId": "vpc-a12bc345",
      "privateIpAddress": "000.00.0.000",
      "publicIpAddress": "00.000.000.000",
      "stateReason": null,
      "architecture": "x86_64",
      "rootDeviceType": "ebs",
      "rootDeviceName": "/dev/abcd",
      "blockDeviceMappings": [
        {
          "deviceName": "/dev/abcd",
          "ebs": {
            "volumeId": "vol-a1bc234d",
            "status": "attached",
            "attachTime": "2015-03-19T21:13:07.000Z",
            "deleteOnTermination": true
          }
        }
      ],
      "virtualizationType": "hvm",
      "instanceLifecycle": null,
      "spotInstanceRequestId": null,
      "clientToken": "ab1234c5-6d78-910-1112-13ef14g15hi16",
      "tags": [],
      "securityGroups": [
        {
          "groupName": "default",
          "groupId": "sg-a12bcde3"
        }
      ],
      "sourceDestCheck": true,
      "hypervisor": "xen",
      "networkInterfaces": [
        {
          "networkInterfaceId": "eni-1234ab56",
          "subnetId": "subnet-a1b2c3d4",
          "vpcId": "vpc-a12bc345",
          "description": "",
          "ownerId": "123456789012",
          "status": "in-use",
          "macAddress": "1a:23:45:67:b8",
          "privateIpAddress": "000.00.0.000",
          "privateDnsName": "ip-000-00-0-000.us-west-2.compute.internal",
          "sourceDestCheck": true,
          "groups": [
            {
              "groupName": "default",
              "groupId": "sg-a12bcde3"
            }
          ],
          "attachment": {
            "attachmentId": "eni-attach-123a4b5c",
            "deviceIndex": 0,
            "status": "attached",
            "attachTime": "2015-03-19T21:13:05.000Z",
            "deleteOnTermination": true
          },
          "association": {
            "publicIp": "00.000.000.000",
            "publicDnsName":
"ec2-00-000-000-000.us-west-2.compute.amazonaws.com",
            "ipOwnerId": "amazon"
          },
          "privateIpAddresses": [
            {
              "privateIpAddress": "000.00.0.000",
              "privateDnsName":
"ip-000-00-0-000.us-west-2.compute.internal",
              "primary": true,
              "association": {
                "publicIp": "00.000.000.000",
                "publicDnsName":
"ec2-000-00-0-000.us-west-2.compute.amazonaws.com",
                "ipOwnerId": "amazon"
```

```
       }
      }
     ]
    }
   ],
   "iamInstanceProfile": null,
   "ebsOptimized": false,
   "sriovNetSupport": null
  }
 },
 "notificationCreationTime": "2015-03-19T21:20:36.808Z",
 "messageType": "ConfigurationItemChangeNotification",
 "recordVersion": "1.2"
}
```

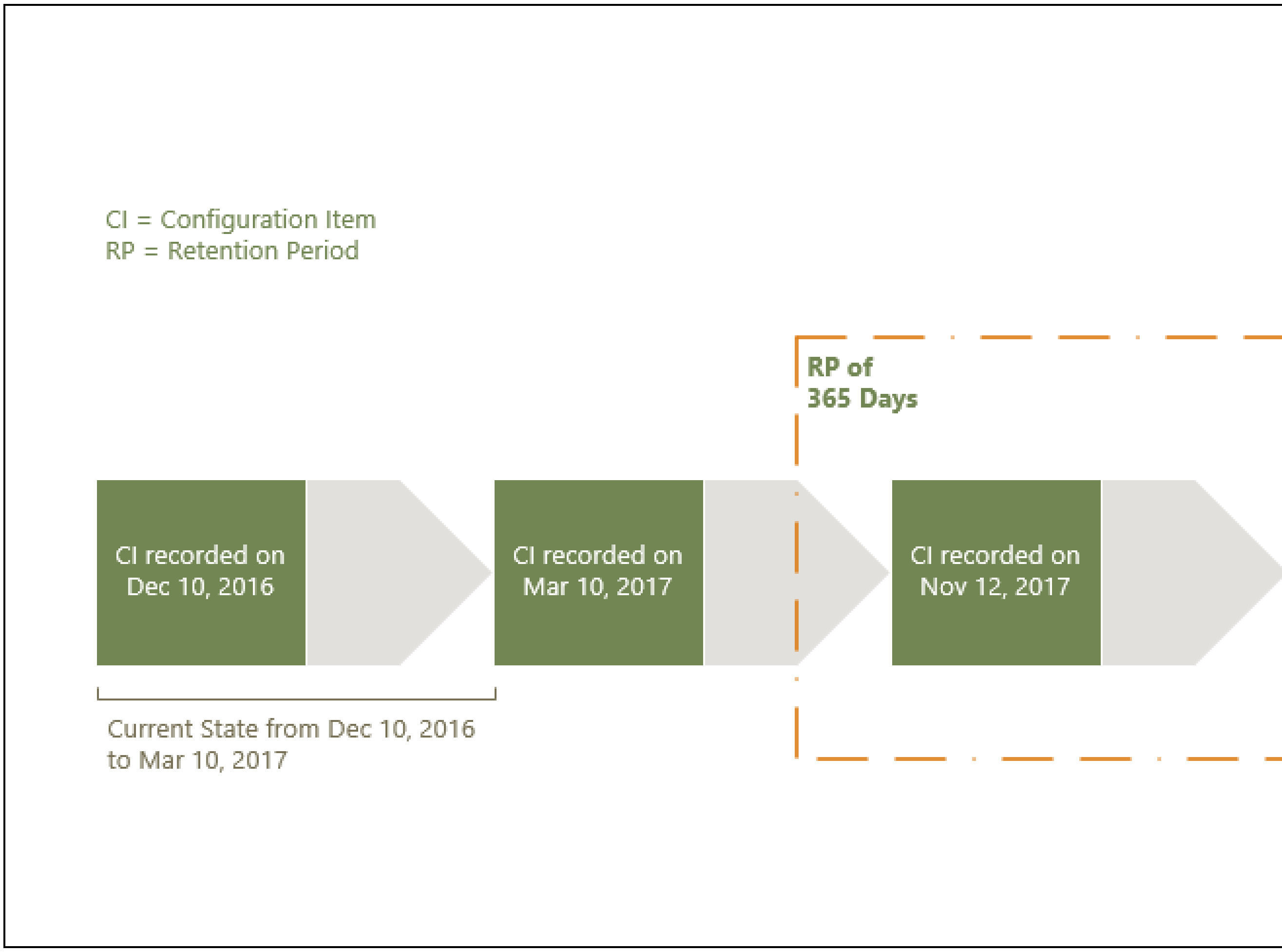
Deleting AWS Config Data

AWS Config allows you to delete your data by specifying a retention period for your `ConfigurationItems`. When you specify a retention period, AWS Config retains your `ConfigurationItems` for that specified period. You can choose a period between a minimum of 30 days and a maximum of 7 years (2557 days). AWS Config deletes data older than your specified retention period. If you do not specify a retention period, AWS Config continues to store `ConfigurationItems` for the default period of 7 years (2557 days). When recording is switched on, the current state of the resource is when a `ConfigurationItem` is recorded and until the next change (a new `ConfigurationItem`) is recorded.

To understand the behavior of retention period, let's take a look at the timeline.

- When recording is switched on, the current state of a resource always exists and can't be deleted irrespective of the date the `ConfigurationItem` is recorded.
- When AWS Config records new `ConfigurationItems`, the previous `ConfigurationItems` are deleted depending on the specified retention period.

In the following timeline, AWS Config records `ConfigurationItems` at the following dates. For the purpose of this timeline, today is represented as May 24, 2018.



The following table explains which `ConfigurationItems` are displayed on the AWS Config timeline based on selected retention period.

Retention Period	Configuration Items displayed on timeline	Explanation
30 days	December 12, 2017	The current state of the resource started from December 12, 2017 when the `ConfigurationItem` was recorded and is valid until today (May 24, 2018). When recording is turned on, the current state always exists.
365 days	December 12, 2017; November 12, 2017, and March 10, 2017	The retention period shows the current state December 12, 2017 and previous `ConfigurationItems` November 12, 2017 and March 10, 2017. The `ConfigurationItem` for March 10, 2017 is displayed on the timeline because that configuration state represented the current state 365 days ago.

After you specify a retention period, AWS Config APIs no longer return `ConfigurationItems` that represent a state older than the specified retention period.

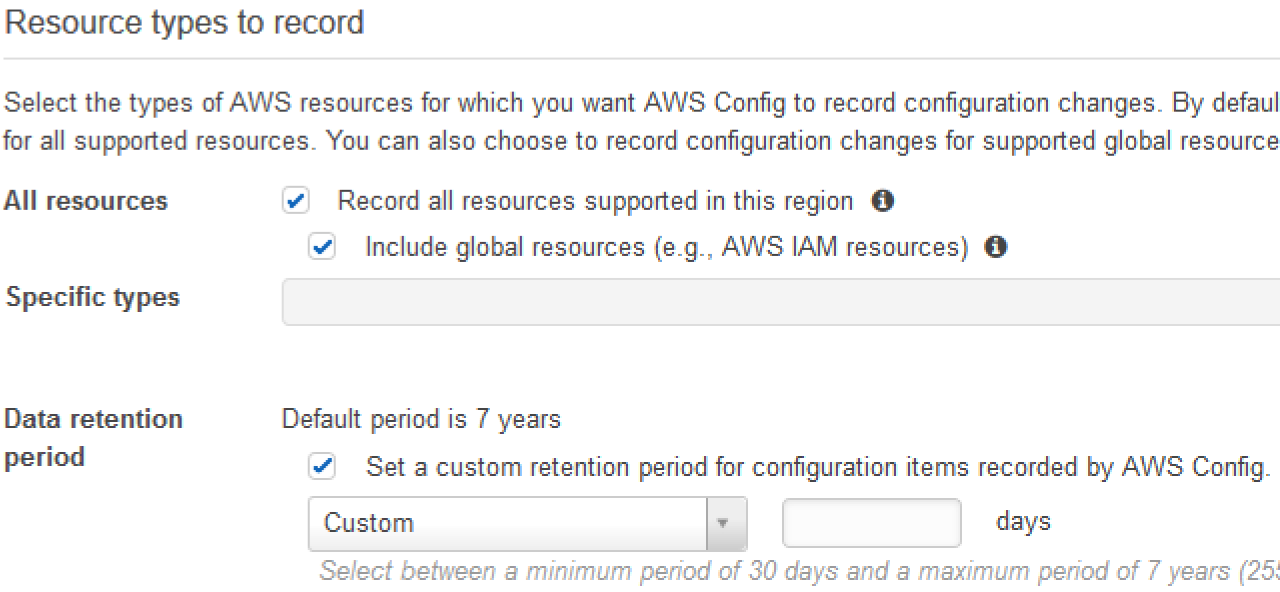
Note

- AWS Config cannot record your `ConfigurationItems` if recording is switched off.
- AWS Config cannot record your `ConfigurationItems` if your IAM role is broken.

Setting Data Retention Period in AWS Management Console

In the AWS Management Console, if you do not select a data retention period, the default period is 7 years or 2557 days.

To set a custom data retention period for configuration items select the checkbox. You can select 1 year, 3 years, 5 years, or a custom period. For a custom period, enter the number of days between 30 and 2557 days.



Resource types to record

Select the types of AWS resources for which you want AWS Config to record configuration changes. By defaul
for all supported resources. You can also choose to record configuration changes for supported global resource

All resources ☑ Record all resources supported in this region
☑ Include global resources (e.g., AWS IAM resources)

Specific types

Data retention period Default period is 7 years
☑ Set a custom retention period for configuration items recorded by AWS Config.
Custom ▾ days
Select between a minimum period of 30 days and a maximum period of 7 years (25

Notifications that AWS Config Sends to an Amazon SNS topic

You can configure AWS Config to stream configuration changes and notifications to an Amazon SNS topic. For example, when a resource is updated, you can get a notification sent to your email, so that you can view the changes. You can also be notified when AWS Config evaluates your custom or managed rules against your resources.

AWS Config sends notifications for the following events:

- Configuration item change for a resource.
- Configuration history for a resource was delivered for your account.
- Configuration snapshot for recorded resources was started and delivered for your account.

- Compliance state of your resources and whether they are compliant with your rules.
- Evaluation started for a rule against your resources.
- AWS Config failed to deliver the notification to your account.

> **Note**
> If you choose email as the notification endpoint for your SNS topic, this can cause a high volume of email. For more information, see Monitoring AWS Config Resource Changes by Email (p. 56).

Topics

Example Configuration Item Change Notifications

AWS Config uses Amazon SNS to deliver notifications to subscription endpoints. These notifications provide the delivery status for configuration snapshots and configuration histories, and they provide each configuration item that AWS Config creates when the configurations of recorded AWS resources change. AWS Config also sends notifications that show whether your resources are compliant against your rules. If you choose to have notifications sent by email, you can use filters in your email client application based on the subject line and message body of the email.

The following is an example payload of an Amazon SNS notification that is generated when AWS Config detects that the Amazon Elastic Block Store volume `vol-ce676ccc` is attached to the instance with an ID of `i-344c463d`. The notification contains the configuration item change for the resource.

```
"Type": "Notification",
"MessageId": "8b945cb0-db34-5b72-b032-1724878af488",
"TopicArn": "arn:aws:sns:us-west-2:123456789012:example",
"Message": {
    "MessageVersion": "1.0",
    "NotificationCreateTime": "2014-03-18T10:11:00Z",
    "messageType": "ConfigurationItemChangeNotification",
    "configurationItems": [
        {
            "configurationItemVersion": "1.0",
            "configurationItemCaptureTime": "2014-03-07T23:47:08.918Z",
            "arn": "arn:aws:us-west-2b:123456789012:volume/vol-ce676ccc",
            "resourceId": "vol-ce676ccc",
            "accountId": "123456789012",
           "configurationStateID": "3e660fdf-4e34-4f32-afeb-0ace5bf3d63a",
            "configuationItemStatus": "OK",
            "relatedEvents": [
                "06c12a39-eb35-11de-ae07-adb69edbb1e4",
                "c376e30d-71a2-4694-89b7-a5a04ad92281"
            ],
            "availibilityZone": "us-west-2b",
                "resourceType": "AWS::EC2::VOLUME",
                "resourceCreationTime": "2014-02-27T21:43:53.885Z",
                "tags": {},
                "relationships": [
                    {
                        "resourceId": "i-344c463d",
                        "resourceType": "AWS::EC2::INSTANCE",
                        "name": "Attached to Instance"
                    }
                ],
                "configuration": {
                    "volumeId": "vol-ce676ccc",
                    "size": 1,
                    "snapshotId": "",
                    "availabilityZone": "us-west-2b",
                    "state": "in-use",
                    "createTime": "2014-02-27T21:43:53.0885+0000",
                    "attachments": [
                        {
                            "volumeId": "vol-ce676ccc",
                            "instanceId": "i-344c463d",
                            "device": "/dev/sdf",
                            "state": "attached",
                            "attachTime": "2014-03-07T23:46:28.0000+0000",
                            "deleteOnTermination": false
                        }
                    ],
                    "tags": [],
                    "volumeType": "standard"
                }
            }
        ],
        "configurationItemDiff": {
            "changeType": "UPDATE",
            "changedProperties": {
                "Configuration.State": {
                    "previousValue": "available",
                    "updatedValue": "in-use",
                    "changeType": "UPDATE"
                },
                "Configuration.Attachments.0": {
                    "updatedValue": {
                        "VolumeId": "vol-ce676ccc",
                        "InstanceId": "i-344c463d",
                        "Device": "/dev/sdf",
                        "State": "attached",
                        "AttachTime": "FriMar0723: 46: 28UTC2014",
                        "DeleteOnTermination": "false"
                    },
                    "changeType": "CREATE"
                }
            }
        }
    },
    "Timestamp": "2014-03-07T23:47:10.001Z",
    "SignatureVersion": "1",
    "Signature": "LgfJNB5aOk/w3omqsYrv5cUFY8yvIJvO5ZZh46/
KGPApk6HXRTBRlkhjacnxIXJEWsGI9mxvMmoWPLJGYEAR5FF/+/
Ro9QTmiTNcEjQ5kB8wGsRWVrk/whAzT2lVtofc365En2T1Ncd9iSFFXfJchgBmI7EACZ28t
+n2mWFgo57n6eGDvHTedslzC6KxkfWTfXsR6zHXzkB3XuZImktflg3iPKtvBb3Zc9iVbNsBEI4FITFWktSqqomYDjc5h0kgapIo4CtC
+qZhMzEbHWpzFlEzvFl55KaZXxDbznBD1ZkqPgno/WufuxszCiMrsmV8pUNUnkU1TA==",
    "SigningCertURL": "https://sns.us-west-2.amazonaws.com/SimpleNotificationService-
e372f8ca30337fdb084e8ac449342c77.pem",
    "UnsubscribeURL": "https://sns.us-west-2.amazonaws.com/?
Action=Unsubscribe&SubscriptionArn=arn:aws:sns:us-
west-2:123456789012:example:a6859fee-3638-407c-907e-879651c9d143"
```

```
}
```

Configuration Items for Resources with Relationships

If a resource is related to other resources, a change to that resource can result in multiple configuration items. The following example shows how AWS Config creates configuration items for resources with relationships.

1. You have an Amazon EC2 instance with an ID of `i-007d374c8912e3e90`, and the instance is associated with an Amazon EC2 security group, `sg-c8b141b4`.
2. You update your EC2 instance to change the security group to another security group, `sg-3f1fef43`.
3. Because the EC2 instance is related to another resource, AWS Config creates multiple configuration items like the following examples:

This notification contains the configuration item change for the EC2 instance when the security group is replaced.

```
{
    "Type": "Notification",
    "MessageId": "faeba85e-ef46-570a-b01c-f8b0faae8d5d",
    "TopicArn": "arn:aws:sns:us-east-2:123456789012:config-topic-ohio",
    "Subject": "[AWS Config:us-east-2] AWS::EC2::Instance i-007d374c8912e3e90 Updated in
 Account 123456789012",
    "Message": {
        "configurationItemDiff": {
            "changedProperties": {
                "Configuration.NetworkInterfaces.0": {
                    "previousValue": {
                        "networkInterfaceId": "eni-fde9493f",
                        "subnetId": "subnet-2372be7b",
                        "vpcId": "vpc-14400670",
                        "description": "",
                        "ownerId": "123456789012",
                        "status": "in-use",
                        "macAddress": "0e:36:a2:2d:c5:e0",
                        "privateIpAddress": "172.31.16.84",
                        "privateDnsName": "ip-172-31-16-84.ec2.internal",
                        "sourceDestCheck": true,
                        "groups": [{
                            "groupName": "example-security-group-1",
                            "groupId": "sg-c8b141b4"
                        }],
                        "attachment": {
                            "attachmentId": "eni-attach-85bd89d9",
                            "deviceIndex": 0,
                            "status": "attached",
                            "attachTime": "2017-01-09T19:36:02.000Z",
                            "deleteOnTermination": true
                        },
                        "association": {
                            "publicIp": "54.175.43.43",
                            "publicDnsName": "ec2-54-175-43-43.compute-1.amazonaws.com",
                            "ipOwnerId": "amazon"
                        },
                        "privateIpAddresses": [{
                            "privateIpAddress": "172.31.16.84",
                            "privateDnsName": "ip-172-31-16-84.ec2.internal",
                            "primary": true,
                            "association": {
                                "publicIp": "54.175.43.43",
                                "publicDnsName":
"ec2-54-175-43-43.compute-1.amazonaws.com",
                                "ipOwnerId": "amazon"
                            }
                        }]
                    },
                    "updatedValue": null,
                    "changeType": "DELETE"
                },
                "Relationships.0": {
                    "previousValue": {
                        "resourceId": "sg-c8b141b4",
                        "resourceName": null,
                        "resourceType": "AWS::EC2::SecurityGroup",
                        "name": "Is associated with SecurityGroup"
                    },
                    "updatedValue": null,
                    "changeType": "DELETE"
                },
                "Configuration.NetworkInterfaces.1": {
                    "previousValue": null,
                    "updatedValue": {
                        "networkInterfaceId": "eni-fde9493f",
                        "subnetId": "subnet-2372be7b",
                        "vpcId": "vpc-14400670",
                        "description": "",
                        "ownerId": "123456789012",
                        "status": "in-use",
                        "macAddress": "0e:36:a2:2d:c5:e0",
                        "privateIpAddress": "172.31.16.84",
                        "privateDnsName": "ip-172-31-16-84.ec2.internal",
                        "sourceDestCheck": true,
                        "groups": [{
                            "groupName": "example-security-group-2",
                            "groupId": "sg-3f1fef43"
                        }],
                        "attachment": {
                            "attachmentId": "eni-attach-85bd89d9",
                            "deviceIndex": 0,
                            "status": "attached",
                            "attachTime": "2017-01-09T19:36:02.000Z",
                            "deleteOnTermination": true
                        },
                        "association": {
                            "publicIp": "54.175.43.43",
                            "publicDnsName": "ec2-54-175-43-43.compute-1.amazonaws.com",
                            "ipOwnerId": "amazon"
                        },
                        "privateIpAddresses": [{
                            "privateIpAddress": "172.31.16.84",
                            "privateDnsName": "ip-172-31-16-84.ec2.internal",
                            "primary": true,
                            "association": {
                                "publicIp": "54.175.43.43",
                                "publicDnsName":
"ec2-54-175-43-43.compute-1.amazonaws.com",
                                "ipOwnerId": "amazon"
                            }
                        }]
                    },
                    "changeType": "CREATE"
                },
                "Relationships.1": {
                    "previousValue": null,
                    "updatedValue": {
```

```
                "resourceId": "sg-3f1fef43",
                "resourceName": null,
                "resourceType": "AWS::EC2::SecurityGroup",
                "name": "Is associated with SecurityGroup"
            },
            "changeType": "CREATE"
        },
        "Configuration.SecurityGroups.1": {
            "previousValue": null,
            "updatedValue": {
                "groupName": "example-security-group-2",
                "groupId": "sg-3f1fef43"
            },
            "changeType": "CREATE"
        },
        "Configuration.SecurityGroups.0": {
            "previousValue": {
                "groupName": "example-security-group-1",
                "groupId": "sg-c8b141b4"
            },
            "updatedValue": null,
            "changeType": "DELETE"
        }
    },
    "changeType": "UPDATE"
},
"configurationItem": {
    "relatedEvents": ["e61e1419-7cb0-477f-8dde-bbfe27467a96"],
    "relationships": [
        {
            "resourceId": "eni-fde9493f",
            "resourceName": null,
            "resourceType": "AWS::EC2::NetworkInterface",
            "name": "Contains NetworkInterface"
        },
        {
            "resourceId": "sg-3f1fef43",
            "resourceName": null,
            "resourceType": "AWS::EC2::SecurityGroup",
            "name": "Is associated with SecurityGroup"
        },
        {
            "resourceId": "subnet-2372be7b",
            "resourceName": null,
            "resourceType": "AWS::EC2::Subnet",
            "name": "Is contained in Subnet"
        },
        {
            "resourceId": "vol-0a2d63a256bce35c5",
            "resourceName": null,
            "resourceType": "AWS::EC2::Volume",
            "name": "Is attached to Volume"
        },
        {
            "resourceId": "vpc-14400670",
            "resourceName": null,
            "resourceType": "AWS::EC2::VPC",
            "name": "Is contained in Vpc"
        }
    ],
    "configuration": {
        "instanceId": "i-007d374c8912e3e90",
        "imageId": "ami-9be6f38c",
        "state": {
            "code": 16,
            "name": "running"
```

```
                },
                "privateDnsName": "ip-172-31-16-84.ec2.internal",
                "publicDnsName": "ec2-54-175-43-43.compute-1.amazonaws.com",
                "stateTransitionReason": "",
                "keyName": "ec2-micro",
                "amiLaunchIndex": 0,
                "productCodes": [],
                "instanceType": "t2.micro",
                "launchTime": "2017-01-09T20:13:28.000Z",
                "placement": {
                    "availabilityZone": "us-east-2c",
                    "groupName": "",
                    "tenancy": "default",
                    "hostId": null,
                    "affinity": null
                },
                "kernelId": null,
                "ramdiskId": null,
                "platform": null,
                "monitoring": {"state": "disabled"},
                "subnetId": "subnet-2372be7b",
                "vpcId": "vpc-14400670",
                "privateIpAddress": "172.31.16.84",
                "publicIpAddress": "54.175.43.43",
                "stateReason": null,
                "architecture": "x86_64",
                "rootDeviceType": "ebs",
                "rootDeviceName": "/dev/xvda",
                "blockDeviceMappings": [{
                    "deviceName": "/dev/xvda",
                    "ebs": {
                        "volumeId": "vol-0a2d63a256bce35c5",
                        "status": "attached",
                        "attachTime": "2017-01-09T19:36:03.000Z",
                        "deleteOnTermination": true
                    }
                }],
                "virtualizationType": "hvm",
                "instanceLifecycle": null,
                "spotInstanceRequestId": null,
                "clientToken": "bIYqA1483990561516",
                "tags": [{
                    "key": "Name",
                    "value": "value"
                }],
                "securityGroups": [{
                    "groupName": "example-security-group-2",
                    "groupId": "sg-3f1fef43"
                }],
                "sourceDestCheck": true,
                "hypervisor": "xen",
                "networkInterfaces": [{
                    "networkInterfaceId": "eni-fde9493f",
                    "subnetId": "subnet-2372be7b",
                    "vpcId": "vpc-14400670",
                    "description": "",
                    "ownerId": "123456789012",
                    "status": "in-use",
                    "macAddress": "0e:36:a2:2d:c5:e0",
                    "privateIpAddress": "172.31.16.84",
                    "privateDnsName": "ip-172-31-16-84.ec2.internal",
                    "sourceDestCheck": true,
                    "groups": [{
                        "groupName": "example-security-group-2",
                        "groupId": "sg-3f1fef43"
                    }],
                    "attachment": {
                        "attachmentId": "eni-attach-85bd89d9",
                        "deviceIndex": 0,
                        "status": "attached",
                        "attachTime": "2017-01-09T19:36:02.000Z",
                        "deleteOnTermination": true
                    },
                    "association": {
                        "publicIp": "54.175.43.43",
                        "publicDnsName": "ec2-54-175-43-43.compute-1.amazonaws.com",
                        "ipOwnerId": "amazon"
                    },
                    "privateIpAddresses": [{
                        "privateIpAddress": "172.31.16.84",
                        "privateDnsName": "ip-172-31-16-84.ec2.internal",
                        "primary": true,
                        "association": {
                            "publicIp": "54.175.43.43",
                            "publicDnsName": "ec2-54-175-43-43.compute-1.amazonaws.com",
                            "ipOwnerId": "amazon"
                        }
                    }]
                }],
                "iamInstanceProfile": null,
                "ebsOptimized": false,
                "sriovNetSupport": null,
                "enaSupport": true
            },
            "supplementaryConfiguration": {},
            "tags": {"Name": "value"},
            "configurationItemVersion": "1.2",
            "configurationItemCaptureTime": "2017-01-09T22:50:14.328Z",
            "configurationStateId": 1484002214328,
            "awsAccountId": "123456789012",
            "configurationItemStatus": "OK",
            "resourceType": "AWS::EC2::Instance",
            "resourceId": "i-007d374c8912e3e90",
            "resourceName": null,
            "ARN": "arn:aws:ec2:us-east-2:123456789012:instance/i-007d374c8912e3e90",
            "awsRegion": "us-east-2",
            "availabilityZone": "us-east-2c",
            "configurationStateMd5Hash": "8d0f41750f5965e0071ae9be063ba306",
            "resourceCreationTime": "2017-01-09T20:13:28.000Z"
        },
        "notificationCreationTime": "2017-01-09T22:50:15.928Z",
        "messageType": "ConfigurationItemChangeNotification",
        "recordVersion": "1.2"
    },
    "Timestamp": "2017-01-09T22:50:16.358Z",
    "SignatureVersion": "1",
    "Signature": "lpJTEYOSr8fUbiaaRNw1ECawJFVoD7I67mIeEkfAWJkqvvpak1ULHLlC
+I0sS/01A4P1Yci8GSK/cOEC/O2XBntlw4CAtbMUgTQvb345Z2YZwcpK0kPNi6v6N51DuZ/6DZA8EC
+gVTNTO09xtNIH8aMlvqyvUSXuh278xayExC5yTRXEg+ikdZRd4QzS7obSK1kgRZWI6ipxPNL6rd56/
VvPxyhcbS7Vm40/2+e0nVb3bjNHBxjQTXSs1Xhuc9eP2gEsC4Sl32bGqdeDU1Y4dFGukuzPYoHuEtDPh
+GkLUq3KeiDAQshxAZLmOIRcQ7iJ/bELDJTN9AcX6lqlDZ79w==",
    "SigningCertURL": "https://sns.us-east-2.amazonaws.com/SimpleNotificationService-
b95095beb82e8f6a046b3aafc7f4149a.pem",
    "UnsubscribeURL": "https://sns.us-east-2.amazonaws.com/?
Action=Unsubscribe&SubscriptionArn=arn:aws:sns:us-east-2:123456789012:config-topic-
ohio:956fe658-0ce3-4fb3-b409-a45f22a3c3d4"
}
```

This notification contains the configuration item change for the EC2 security group, `sg-3f1fef43`, which is associated with the instance.

```
{
    "Type": "Notification",
    "MessageId": "564d873e-711e-51a3-b48c-d7d064f65bf4",
    "TopicArn": "arn:aws:sns:us-east-2:123456789012:config-topic-ohio",
    "Subject": "[AWS Config:us-east-2] AWS::EC2::SecurityGroup sg-3f1fef43 Created in
 Account 123456789012",
    "Message": {
        "configurationItemDiff": {
            "changedProperties": {},
            "changeType": "CREATE"
        },
        "configurationItem": {
            "relatedEvents": ["e61e1419-7cb0-477f-8dde-bbfe27467a96"],
            "relationships": [{
                "resourceId": "vpc-14400670",
                "resourceName": null,
                "resourceType": "AWS::EC2::VPC",
                "name": "Is contained in Vpc"
            }],
            "configuration": {
                "ownerId": "123456789012",
                "groupName": "example-security-group-2",
                "groupId": "sg-3f1fef43",
                "description": "This is an example security group.",
                "ipPermissions": [],
                "ipPermissionsEgress": [{
                    "ipProtocol": "-1",
                    "fromPort": null,
                    "toPort": null,
                    "userIdGroupPairs": [],
                    "ipRanges": ["0.0.0.0/0"],
                    "prefixListIds": []
                }],
                "vpcId": "vpc-14400670",
                "tags": []
            },
            "supplementaryConfiguration": {},
            "tags": {},
            "configurationItemVersion": "1.2",
            "configurationItemCaptureTime": "2017-01-09T22:50:15.156Z",
            "configurationStateId": 1484002215156,
            "awsAccountId": "123456789012",
            "configurationItemStatus": "ResourceDiscovered",
            "resourceType": "AWS::EC2::SecurityGroup",
            "resourceId": "sg-3f1fef43",
            "resourceName": null,
            "ARN": "arn:aws:ec2:us-east-2:123456789012:security-group/sg-3f1fef43",
            "awsRegion": "us-east-2",
            "availabilityZone": "Not Applicable",
            "configurationStateMd5Hash": "7399608745296f67f7fe1c9ca56d5205",
            "resourceCreationTime": null
        },
        "notificationCreationTime": "2017-01-09T22:50:16.021Z",
        "messageType": "ConfigurationItemChangeNotification",
        "recordVersion": "1.2"
    },
    "Timestamp": "2017-01-09T22:50:16.413Z",
    "SignatureVersion": "1",
    "Signature": "GocX31Uu/zNFo85hZqzsNy30skwmLnjPjj+UjaJzkih
+dCP6gXYGQ0bK7uMzaLL2C/ibYOOsT7I/XY4NW6Amc5T46ydyHDjFRtQi8UfUQTqLXYRTnpOO/
hyK9lMFfhUNs4NwQpmx3n3mYEMpLuMs8DCgeBmB3AQ+hXPhNuNuR3mJVgo25S8AqphN9O0okZ2MKNUQy8iJm/
CVAx70TdnYsfUMZ24n88bUzAfiHGzc8QTthMdrFVUwXxa1h/7Zl8+A7BwoGmjo7W8CfLDVwaIQv1Uplgk3qd95Z0AXOzXVxNBQEi4k8
    "SigningCertURL": "https://sns.us-east-2.amazonaws.com/SimpleNotificationService-
b95095beb82e8f6a046b3aafc7f4149a.pem",
    "UnsubscribeURL": "https://sns.us-east-2.amazonaws.com/?
Action=Unsubscribe&SubscriptionArn=arn:aws:sns:us-east-2:123456789012:config-topic-
ohio:956fe658-0ce3-4fb3-b409-a45f22a3c3d4"
}
```

Example Configuration History Delivery Notification

The configuration history is a collection of the configuration items for a resource type over a time period. The following is an example notification that AWS Config sends when the configuration history for a CloudTrail trail resource is delivered for your account.

```
{
    "Type": "Notification",
    "MessageId": "ce49bf2c-d03a-51b0-8b6a-ef480a8b39fe",
    "TopicArn": "arn:aws:sns:us-east-2:123456789012:config-topic-ohio",
    "Subject": "[AWS Config:us-east-2] Configuration History Delivery Completed for Account
 123456789012",
    "Message": {
        "s3ObjectKey": "AWSLogs/123456789012/Config/us-
east-2/2016/9/27/ConfigHistory/123456789012_Config_us-
east-2_ConfigHistory_AWS::CloudTrail::Trail_20160927T195818Z_20160927T195818Z_1.json.gz",
        "s3Bucket": "config-bucket-123456789012-ohio",
        "notificationCreationTime": "2016-09-27T20:37:05.217Z",
        "messageType": "ConfigurationHistoryDeliveryCompleted",
        "recordVersion": "1.1"
    },
    "Timestamp": "2016-09-27T20:37:05.315Z",
    "SignatureVersion": "1",
    "Signature": "OuIcS5RAKXTR6chQEJp3if4KJQVlBz2kmXh7QE1/
RJQiCPsCNfG0J0rUZ1rqfKMqpps/Ka+zF0kg4dUCWV9PF0dliuwnjfbtYmDZpP4EBOoGmxcTliUn1AIe/
yeGFDuc6P3EotP3zt02rhmxjezjf3c11urstFZ8rTLVXp0z0xeyk4da0UetLsWZxUFEG0Z5uhk09mBo5dg/4mryIOovidhrbCBgX5ma
    "SigningCertURL": "https://sns.us-east-2.amazonaws.com/SimpleNotificationService-
b95095beb82e8f6a046b3aafc7f4149a.pem",
    "UnsubscribeURL": "https://sns.us-east-2.amazonaws.com/?
Action=Unsubscribe&SubscriptionArn=arn:aws:sns:us-east-2:123456789012:config-topic-
ohio:956fe658-0ce3-4fb3-b409-a45f22a3c3d4"
}
```

Example Configuration Snapshot Delivery Started Notification

The following is an example notification that AWS Config sends when AWS Config starts delivering the configuration snapshot for your account.

```
{
    "Type": "Notification",
    "MessageId": "a32d0487-94b1-53f6-b4e6-5407c9c00be6",
    "TopicArn": "arn:aws:sns:us-east-2:123456789012:config-topic-ohio",
    "Subject": "[AWS Config:us-east-2] Configuration Snapshot Delivery Started for Account
 123456789012",
    "Message": {
        "configSnapshotId": "108e0794-84a7-4cca-a179-76a199ddd11a",
        "notificationCreationTime": "2016-10-18T17:26:09.572Z",
        "messageType": "ConfigurationSnapshotDeliveryStarted",
        "recordVersion": "1.1"
    },
    "Timestamp": "2016-10-18T17:26:09.840Z",
    "SignatureVersion": "1",
    "Signature": "BBA0DeKsfteTpYyZH5HPANpOLmW/jumOMBsghRq/kimY9tjNlkF/
V3BpLG1HVmDQdQzBh6oKE0h0rxcazbyGf5KF5W5r1zKKlEnS9xugFzALPUx//
olSJ4neWalLBKNIq1xvAQgu9qHfDR7dS2aCwe4scQfqOjn1Ev7PlZqxmT+ux3SR/
C54cbfcduDpDsPwdo868+TpZvMtaU30ySnX04fmOgxoiA8AJO/EnjduQ08/zd4SYXhm+H9wavcwXB9XECelHhRW70Y
+wHQixfx40S1SaSRzvnJE+m9mHphFQs64YraRDRv6tMaenTk6CVPO+81ceAXIg2E1m7hZ7lz4PA==",
    "SigningCertURL": "https://sns.us-east-2.amazonaws.com/SimpleNotificationService-
b95095beb82e8f6a046b3aafc7f4149a.pem",
    "UnsubscribeURL": "https://sns.us-east-2.amazonaws.com/?
Action=Unsubscribe&SubscriptionArn=arn:aws:sns:us-east-2:123456789012:config-topic-
ohio:956fe658-0ce3-4fb3-b409-a45f22a3c3d4"
}
```

Example Configuration Snapshot Delivery Notification

The configuration snapshot is a collection of configuration items for all recorded resources and their configurations in your account. The following is an example notification that AWS Config sends when the configuration snapshot is delivered for your account.

```
{
    "Type": "Notification",
    "MessageId": "9fc82f4b-397e-5b69-8f55-7f2f86527100",
    "TopicArn": "arn:aws:sns:us-east-2:123456789012:config-topic-ohio",
    "Subject": "[AWS Config:us-east-2] Configuration Snapshot Delivery Completed for
 Account 123456789012",
    "Message": {
        "configSnapshotId": "16da64e4-cb65-4846-b061-e6c3ba43cb96",
        "s3ObjectKey": "AWSLogs/123456789012/Config/us-east-2/2016/9/27/
ConfigSnapshot/123456789012_Config_us-east-2_ConfigSnapshot_20160927T183939Z_16da64e4-
cb65-4846-b061-e6c3ba43cb96.json.gz",
        "s3Bucket": "config-bucket-123456789012-ohio",
        "notificationCreationTime": "2016-09-27T18:39:39.853Z",
        "messageType": "ConfigurationSnapshotDeliveryCompleted",
        "recordVersion": "1.1"
    },
    "Timestamp": "2016-09-27T18:39:40.062Z",
    "SignatureVersion": "1",
    "Signature": "PMkWfUuj/fKIEXA7s2wTDLbZoF/MDsUkPspYghOpwu9n6m+C
+zrm0cEZXPxxJPvhnWozG7SVqkHYf9QgI/diW2twP/HPDn5GQs2rNDc+YlaByEXnKVtHV1Gd4r1kN57E/
oOW5NVLNczk5ymxAW+WGdptZJkCgyVuhJ28s08m3Z3Kqz96PPSnXzYZoCfCn/
yP6CqXoN7olr4YCbYxYwn8zOUYcPmc45yYNSUTKZi+RJQRnDJkL2qb+s4h9w2fjbBBj8xe830VbFJqbHp7UkSfpc64Y
+tRvmMLY5CI1cYrnuPRhTLdUk+R0sshg5G+JMtSLVG/TvWbjz44CKXJprjIQg==",
    "SigningCertURL": "https://sns.us-east-2.amazonaws.com/SimpleNotificationService-
b95095beb82e8f6a046b3aafc7f4149a.pem",
    "UnsubscribeURL": "https://sns.us-east-2.amazonaws.com/?
Action=Unsubscribe&SubscriptionArn=arn:aws:sns:us-east-2:123456789012:config-topic-
ohio:956fe658-0ce3-4fb3-b409-a45f22a3c3d4"
}
```

Example Compliance Change Notification

When AWS Config evaluates your resources against a custom or managed rule, AWS Config sends a notification that shows whether the resources are compliant against the rule.

The following is an example notification where the CloudTrail trail resource is compliant against the `cloudtrail-enabled` managed rule.

```
{
    "Type": "Notification",
    "MessageId": "11fd05dd-47e1-5523-bc01-55b988bb9478",
    "TopicArn": "arn:aws:sns:us-east-2:123456789012:config-topic-ohio",
    "Subject": "[AWS Config:us-east-2] AWS::::Account 123456789012 is COMPLIANT with
 cloudtrail-enabled in Accoun...",
    "Message": {
        "awsAccountId": "123456789012",
        "configRuleName": "cloudtrail-enabled",
        "configRuleARN": "arn:aws:config:us-east-2:123456789012:config-rule/config-
rule-9rpvxc",
        "resourceType": "AWS::::Account",
        "resourceId": "123456789012",
        "awsRegion": "us-east-2",
        "newEvaluationResult": {
            "evaluationResultIdentifier": {
                "evaluationResultQualifier": {
                    "configRuleName": "cloudtrail-enabled",
                    "resourceType": "AWS::::Account",
                    "resourceId": "123456789012"
                },
                "orderingTimestamp": "2016-09-27T19:48:40.619Z"
            },
            "complianceType": "COMPLIANT",
            "resultRecordedTime": "2016-09-27T19:48:41.405Z",
            "configRuleInvokedTime": "2016-09-27T19:48:40.914Z",
            "annotation": null,
            "resultToken": null
        },
        "oldEvaluationResult": {
            "evaluationResultIdentifier": {
                "evaluationResultQualifier": {
                    "configRuleName": "cloudtrail-enabled",
                    "resourceType": "AWS::::Account",
                    "resourceId": "123456789012"
                },
                "orderingTimestamp": "2016-09-27T16:30:49.531Z"
            },
            "complianceType": "NON_COMPLIANT",
            "resultRecordedTime": "2016-09-27T16:30:50.717Z",
            "configRuleInvokedTime": "2016-09-27T16:30:50.105Z",
            "annotation": null,
            "resultToken": null
        },
        "notificationCreationTime": "2016-09-27T19:48:42.620Z",
        "messageType": "ComplianceChangeNotification",
        "recordVersion": "1.0"
    },
    "Timestamp": "2016-09-27T19:48:42.749Z",
    "SignatureVersion": "1",
    "Signature": "XZ9FfLb2ywkW9yj0yBkNtIP5q7Cry6JtCEyUiHmG9gpOZi3seQ41udhtAqCZoiNiizAEi
+6gcttHCRV1hNemzp/
YmBmTfO6azYXt0FJDaEvd86k68VCS9aqRlBBjYlNo7ILi4Pqd5rE4BX2YBQSzcQyERGkUfTZ2BIFyAmb1Q/
y4/6ez8rDyi545FDSlgcGEb4LKLNR6eDi4FbKtMGZHA7Nz8obqs1dHbgWYnp3c80mVLl7ohP4hilcxdywAgXrbsN32ekYr15gdHozx8
+BIZ21ZtkcUtY5B3ImgRlUO7Yhn3L3c6rZxQ==",
    "SigningCertURL": "https://sns.us-east-2.amazonaws.com/SimpleNotificationService-
b95095beb82e8f6a046b3aafc7f4149a.pem",
    "UnsubscribeURL": "https://sns.us-east-2.amazonaws.com/?
Action=Unsubscribe&SubscriptionArn=arn:aws:sns:us-east-2:123456789012:config-topic-
ohio:956fe658-0ce3-4fb3-b409-a45f22a3c3d4"
}
```

Example Rules Evaluation Started Notification

AWS Config sends a notification when it starts to evaluate your custom or managed rule against your resources. The following is an example notification when AWS Config starts to evaluate the `iam-password-policy` managed rule.

```
{
    "Type": "Notification",
    "MessageId": "358c8e65-e27a-594e-82d0-de1fe77393d7",
    "TopicArn": "arn:aws:sns:us-east-2:123456789012:config-topic-ohio",
    "Subject": "[AWS Config:us-east-2] Config Rules Evaluation Started for Account
 123456789012",
    "Message": {
        "awsAccountId": "123456789012",
        "awsRegion": "us-east-2",
        "configRuleNames": ["iam-password-policy"],
        "notificationCreationTime": "2016-10-13T21:55:21.339Z",
        "messageType": "ConfigRulesEvaluationStarted",
        "recordVersion": "1.0"
    },
    "Timestamp": "2016-10-13T21:55:21.575Z",
    "SignatureVersion": "1",
    "Signature": "DE431D+24zzFRboyPY2bPTsznJWe8L6TjDC+ItYlLFkE9jACSBl3sQ1uSjYzEhEbN7Cs
+wBoHnJ/DxOSpyCxt4giqgKd+H2I636BvrQwHDhJwJm7qI6P8IozEliRvRWbM38zDTvHqkmmXQbdDHRsK/
MssMeVTBKuW0x8ivMrj+KpwuF57tE62eXeFhjBeJ0DKQV+aC+i3onsuT7HQvXQDBPdOM+cSuLrJaMQJ6TcMU5G76qg/
gl494ilb4Vj4udboGWpHSgUvI3guFsc1SsTrlWXQKXabWtsCQPfdOhkKgmViCfMZrLRp8Pjnu
+uspYQELkEfwBchDVVzd15iMrAzQ==",
    "SigningCertURL": "https://sns.us-east-2.amazonaws.com/SimpleNotificationService-
b95095beb82e8f6a046b3aafc7f4149a.pem",
    "UnsubscribeURL": "https://sns.us-east-2.amazonaws.com/?
Action=Unsubscribe&SubscriptionArn=arn:aws:sns:us-east-2:123456789012:config-topic-
ohio:956fe658-0ce3-4fb3-b409-a45f22a3c3d4"
}
```

Example Oversized Configuration Item Change Notification

When AWS Config detects a configuration change for a resource, it sends a configuration item notification. If the notification exceeds the maximum size allowed by Amazon Simple Notification Service (Amazon SNS), the notification includes a brief summary of the configuration item. You can view the complete notification in the Amazon S3 bucket location specified in the `s3BucketLocation` field.

The following example notification shows a configuration item for an Amazon EC2 instance. The notification includes a summary of the changes and the location of the notification in the Amazon S3 bucket.

```
View the Timeline for this Resource in AWS Config Management Console:
    https://console.aws.amazon.com/config/home?region=us-west-2#/timeline/
AWS::EC2::Instance/resourceId_14b76876-7969-4097-ab8e-a31942b02e80?
time=2016-10-06T16:46:16.261Z

    The full configuration item change notification for this resource exceeded the maximum
 size allowed by Amazon Simple Notification Service (SNS). A summary of the configuration
 item is provided here. You can view the complete notification in the specified Amazon S3
 bucket location.

    New State Record Summary:
    ----------------------------
    {
      "configurationItemSummary": {
        "changeType": "UPDATE",
        "configurationItemVersion": "1.2",
        "configurationItemCaptureTime": "2016-10-06T16:46:16.261Z",
        "configurationStateId": 0,
        "awsAccountId": "123456789012",
        "configurationItemStatus": "OK",
        "resourceType": "AWS::EC2::Instance",
        "resourceId": "resourceId_14b76876-7969-4097-ab8e-a31942b02e80",
        "resourceName": null,
        "ARN": "arn:aws:ec2:us-west-2:123456789012:instance/resourceId_14b76876-7969-4097-
ab8e-a31942b02e80",
        "awsRegion": "us-west-2",
        "availabilityZone": null,
        "configurationStateMd5Hash": "8f1ee69b287895a0f8bc5753eca68e96",
        "resourceCreationTime": "2016-10-06T16:46:10.489Z"
      },
      "s3DeliverySummary": {
        "s3BucketLocation": "my-bucket/AWSLogs/123456789012/Config/
us-west-2/2016/10/6/OversizedChangeNotification/AWS::EC2::Instance/
resourceId_14b76876-7969-4097-ab8e-a31942b02e80/123456789012_Config_us-
west-2_ChangeNotification_AWS::EC2::Instance_resourceId_14b76876-7969-4097-ab8e-
a31942b02e80_20161006T164616Z_0.json.gz",
        "errorCode": null,
        "errorMessage": null
      },
      "notificationCreationTime": "2016-10-06T16:46:16.261Z",
      "messageType": "OversizedConfigurationItemChangeNotification",
      "recordVersion": "1.0"
    }
```

Example Delivery Failed Notification

AWS Config sends a delivery failed notification if AWS Config can't deliver the configuration snapshot or an oversized configuration item change notification to your Amazon S3 bucket. Verify that you specified a valid Amazon S3 bucket.

```
View the Timeline for this Resource in AWS Config Management Console:
    https://console.aws.amazon.com/config/home?region=us-west-2#/timeline/
AWS::EC2::Instance/test_resourceId_014b953d-75e3-40ce-96b9-c7240b975457?
time=2016-10-06T16:46:13.749Z

     The full configuration item change notification for this resource exceeded the maximum
 size allowed by Amazon Simple Notification Service (SNS). A summary of the configuration
 item is provided here. You can view the complete notification in the specified Amazon S3
 bucket location.

    New State Record Summary:
    ----------------------------
    {
      "configurationItemSummary": {
        "changeType": "UPDATE",
        "configurationItemVersion": "1.2",
        "configurationItemCaptureTime": "2016-10-06T16:46:13.749Z",
        "configurationStateId": 0,
        "awsAccountId": "123456789012",
        "configurationItemStatus": "OK",
        "resourceType": "AWS::EC2::Instance",
        "resourceId": "test_resourceId_014b953d-75e3-40ce-96b9-c7240b975457",
        "resourceName": null,
        "ARN": "arn:aws:ec2:us-west-2:123456789012:instance/
test_resourceId_014b953d-75e3-40ce-96b9-c7240b975457",
        "awsRegion": "us-west-2",
        "availabilityZone": null,
        "configurationStateMd5Hash": "6de64b95eacd30e7b63d4bba7cd80814",
        "resourceCreationTime": "2016-10-06T16:46:10.489Z"
      },
      "s3DeliverySummary": {
        "s3BucketLocation": null,
        "errorCode": "NoSuchBucket",
        "errorMessage": "Failed to deliver notification to bucket: bucket-example for
 account 123456789012 in region us-west-2."
      },
      "notificationCreationTime": "2016-10-06T16:46:13.749Z",
      "messageType": "OversizedConfigurationItemChangeDeliveryFailed",
      "recordVersion": "1.0"
    }
```

Controlling Permissions for AWS Config

AWS Config integrates with AWS Identity and Access Management (IAM), which allows you to create permission policies to attach to your IAM role, Amazon S3 buckets and Amazon Simple Notification Service (Amazon SNS) topics. You can use AWS Identity and Access Management to create AWS Config permission policies to attach to the IAM roles. A policy is a set of statements that grants AWS Config permissions.

> **Important**
> We consider it a best practice not to use root account credentials to perform everyday work in AWS. Instead, we recommend that you create an IAM administrators group with appropriate permissions, create IAM users for the people in your organization who need to perform administrative tasks (including for yourself), and add those users to the administrative group. For more information, see IAM Best Practices in the *IAM User Guide* guide.

The first two topics control user permissions for AWS Config followed by topics that provide accurate configuration information about permissions needed for AWS Config. The topics provide examples of recommended IAM policies to use with the AWS Config console and the AWS Command Line Interface.

Topics

Granting Permissions for AWS Config Administration

To allow users to administer AWS Config, you must grant explicit permissions to IAM users to perform the actions associated with AWS Config tasks. For most scenarios, you can do this using an AWS managed policy that contains predefined permissions.

> **Note**
> The permissions you grant to users to perform AWS Config administration tasks are not the same as the permissions that AWS Config itself requires in order to deliver log files to Amazon S3 buckets or send notifications to Amazon SNS topics.

Users who set up and manage AWS Config must have full-access permissions. With full-access permissions, users can provide Amazon S3 and Amazon SNS endpoints that AWS Config delivers data to, create a role for AWS Config, and turn on and turn off recording.

Users who use AWS Config but don't need to set up AWS Config should have read-only permissions. With read-only permissions, users can look up the configurations of resources or search for resources by tags.

A typical approach is to create an IAM group that has the appropriate permissions and then add individual IAM users to that group. For example, you might create an IAM group for users who should have full access to AWS Config actions, and a separate group for users who should be able to view the configurations but not create or change a role.

Contents

Creating an IAM Group and Users for AWS Config Access

1. Open the IAM console at https://console.aws.amazon.com/iam.
2. From the dashboard, choose **Groups** in the navigation pane, and then choose **Create New Group**.
3. Type a name, and then choose **Next Step**.
4. On the **Attach Policy** page, find and choose **AWSConfigUserAccess**. This policy provides user access to use AWS Config, including searching by tags on resources, and reading all tags. This does not provide permission to configure AWS Config which requires administrative privileges.

   Note
   You can also create a custom policy that grants permissions to individual actions. For more information, see Granting Custom Permissions for AWS Config Users (p. 79).
5. Choose **Next Step**.
6. Review the information for the group you are about to create.

   Note
   You can edit the group name, but you will need to choose the policy again.
7. Choose **Create Group**. The group that you created appears in the list of groups.
8. Choose the group name that you created, choose **Group Actions**, and then choose **Add Users to Group**.
9. On the **Add Users to Group** page, choose the existing IAM users, and then choose **Add Users**. If you don't already have IAM users, choose **Create New Users**, enter user names, and then choose **Create**.
10. If you created new users, choose **Users** in the navigation pane and complete the following for each user:

    a. Choose the user.
    b. If the user will use the console to manage AWS Config, in the **Security Credentials** tab, choose **Manage Password**, and then create a password for the user.
    c. If the user will use the AWS CLI or API to manage AWS Config, and if you didn't already create access keys, in the **Security Credentials** tab, choose **Manage Access Keys** and then create access keys. Store the keys in a secure location.
    d. Give each user his or her credentials (access keys or password).

Granting Full-Access Permission for AWS Config Access

1. Sign in to the AWS Identity and Access Management (IAM) console at https://console.aws.amazon.com/iam.

2. In the navigation pane, choose **Policies**, and then choose **Create Policy**.
3. For **Create Your Own Policy**, choose **Select**.
4. Type a policy name and description. For example: `AWSConfigFullAccess`.
5. For **Policy Document**, type or paste the full-access policy into the editor. You can use the Full access (p. 80).
6. Choose **Validate Policy** and ensure that no errors display in a red box at the top of the screen. Correct any errors that are reported.
7. Choose **Create Policy** to save your new policy.
8. In the list of policies, select the policy that you created. You can use the **Filter** menu and the **Search** box to find the policy.
9. Choose **Policy Actions**, and then choose **Attach**.
10. Select the users, groups, or roles, and then choose **Attach Policy**. You can use the **Filter** menu and the **Search** box to filter the list.
11. Choose **Apply Policy**.

> **Note**
> Instead of creating a managed policy, you can also create an inline policy from the IAM console and attach it to an IAM user, group, or role. For more information, see Working with Inline Policies in the *IAM User Guide*.

Additional Resources

To learn more about creating IAM users, groups, policies, and permissions, see Creating an Admins Group Using the Console and Permissions and Policies in the *IAM User Guide*.

Granting Custom Permissions for AWS Config Users

AWS Config policies grant permissions to users who work with AWS Config. If you need to grant different permissions to users, you can attach a AWS Config policy to an IAM group or to a user. You can edit the policy to include or exclude specific permissions. You can also create your own custom policy. Policies are JSON documents that define the actions a user is allowed to perform and the resources that the user is allowed to perform those actions on.

Contents

Read-only access

The following example shows a AWS managed policy, `AWSConfigUserAccess` that grants read-only access to AWS Config. The policy also grants permission to read objects in Amazon S3 buckets, but not create or delete them.

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "config:Get*",
        "config:Describe*",
        "config:Deliver*",
        "config:List*",
        "tag:GetResources",
        "tag:GetTagKeys",
        "cloudtrail:DescribeTrails",
        "cloudtrail:GetTrailStatus",
        "cloudtrail:LookupEvents"
      ],
      "Resource": "*"
    }
  ]
}
```

In the policy statements, the `Effect` element specifies whether the actions are allowed or denied. The `Action` element lists the specific actions that the user is allowed to perform. The `Resource` element lists the AWS resources the user is allowed to perform those actions on. For policies that control access to AWS Config actions, the `Resource` element is always set to `*`, a wildcard that means "all resources."

The values in the `Action` element correspond to the APIs that the services support. The actions are preceded by `config:` to indicate that they refer to AWS Config actions. You can use the `*` wildcard character in the `Action` element, such as in the following examples:

- `"Action": ["config:*ConfigurationRecorder"]`

  This allows all AWS Config actions that end with "ConfigurationRecorder" (`StartConfigurationRecorder`, `StopConfigurationRecorder`).
- `"Action": ["config:*"]`

  This allows all AWS Config actions, but not actions for other AWS services.
- `"Action": ["*"]`

  This allows all AWS actions. This permission is suitable for a user who acts as an AWS administrator for your account.

The read-only policy doesn't grant user permission for the actions such as `StartConfigurationRecorder`, `StopConfigurationRecorder`, and `DeleteConfigurationRecorder`. Users with this policy are not allowed to start configuration recorder, stop configuration recorder, or delete configuration recorder. For the list of AWS Config actions, see the AWS Config API Reference.

Full access

The following example shows a policy that grants full access to AWS Config. It grants users the permission to perform all AWS Config actions. It also lets users manage files in Amazon S3 buckets and manage Amazon SNS topics in the account that the user is associated with.

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": [
                "sns:AddPermission",
                "sns:CreateTopic",
                "sns:DeleteTopic",
                "sns:GetTopicAttributes",
                "sns:ListPlatformApplications",
                "sns:ListTopics",
                "sns:SetTopicAttributes"
            ],
            "Resource": "arn:aws:sns:*"
        },
        {
            "Effect": "Allow",
            "Action": [
                "s3:CreateBucket",
                "s3:GetBucketAcl",
                "s3:GetBucketLocation",
                "s3:GetBucketNotification",
                "s3:GetBucketPolicy",
                "s3:GetBucketRequestPayment",
                "s3:GetBucketVersioning",
                "s3:ListAllMyBuckets",
                "s3:ListBucket",
                "s3:ListBucketMultipartUploads",
                "s3:ListBucketVersions",
                "s3:PutBucketPolicy"
            ],
            "Resource": "arn:aws:s3:::*"
        },
        {
            "Effect": "Allow",
            "Action": [
                "iam:CreateRole",
                "iam:GetRole",
                "iam:GetRolePolicy",
                "iam:ListRolePolicies",
                "iam:ListRoles",
                "iam:PassRole",
                "iam:PutRolePolicy",
                "iam:AttachRolePolicy",
                "iam:CreatePolicy",
                "iam:CreatePolicyVersion",
                "iam:DeletePolicyVersion"
            ],
            "Resource": "*"
        },
        {
            "Effect": "Allow",
            "Action": [
                "cloudtrail:DescribeTrails",
                "cloudtrail:GetTrailStatus",
                "cloudtrail:LookupEvents"
            ],
            "Resource": "*"
        },
        {
            "Effect": "Allow",
            "Action": [
                "config:*",
                "tag:Get*"
            ],
            "Resource": "*"
        }
    ]
```

```
}
```

Controlling User Permissions for Actions on Multi-Account Multi-Region Data Aggregation

You can use resource-level permissions to control a user's ability to perform specific actions on multi-account multi-region data aggregation. AWS Config multi-account multi-region data aggregation API's support resource level permissions. With resource level permission can restrict to access/modify the resource data to specific users.

For example, you want to retrict access to resource data to specific users. You can create two aggregators `AccessibleAggregator` and `InAccessibleAggregator`. Then attach an IAM policy that allows access to the `AccessibleAggregator`.

In the first policy, you allow the aggregator actions such as `DescribeConfigurationAggregators` and `DeleteConfigurationAggregator` actions for the config ARN that you specify. In the following example, the config ARN is `arn:aws:config:ap-northeast-1:`*`AccountID`*`:config-aggregator/config-aggregator-mocpsqhs`.

```

{
        "Version": "2012-10-17",
        "Statement": [
        {
        "Sid": "ConfigReadOnly",
        "Effect": "Allow",
        "Action": [
            "config:PutConfigurationAggregator",
            "config:DescribePendingAggregationRequests",
            "config:DeletePendingAggregationRequest",
            "config:GetAggregateConfigRuleComplianceSummary",
            "config:DescribeAggregateComplianceByConfigRules",
            "config:GetAggregateComplianceDetailsByConfigRule",
            "config:DescribeConfigurationAggregators",
            "config:DescribeConfigurationAggregatorSourcesStatus",
            "config:DeleteConfigurationAggregator"
        ],
        "Resource": "arn:aws:config:ap-northeast-1:AccountID:config-aggregator/config-
aggregator-mocpsqhs"
        }
    ]
}
```

In the second policy, you deny the aggregator actions for the config ARN that you specify. In the following example, the config ARN is `arn:aws:config:ap-northeast-1:`*`AccountID`*`:config-aggregator/config-aggregator-pokxzldx`.

```

{
        "Version": "2012-10-17",
        "Statement": [
        {
        "Sid": "ConfigReadOnly",
        "Effect": "Deny",
        "Action": [
            "config:PutConfigurationAggregator",
            "config:DescribePendingAggregationRequests",
            "config:DeletePendingAggregationRequest",
            "config:GetAggregateConfigRuleComplianceSummary",
            "config:DescribeAggregateComplianceByConfigRules",
            "config:GetAggregateComplianceDetailsByConfigRule",
            "config:DescribeConfigurationAggregators",
            "config:DescribeConfigurationAggregatorSourcesStatus",
            "config:DeleteConfigurationAggregator"
        ],
        "Resource": "arn:aws:config:ap-northeast-1:AccountID:config-aggregator/config-
aggregator-pokxzldx"
        }
    ]
}
```

If a user of the developer group tries to describe or delete configuration aggregators on the config that you specified in the second policy, that user gets an access denied exception.

The following AWS CLI examples show that the user creates two aggregators, `AccessibleAggregator` and `InAccessibleAggregator`.

```
aws configservice describe-configuration-aggregators
```

The command complete successfully:

```
{
    "ConfigurationAggregators": [
        {
            "ConfigurationAggregatorArn": "arn:aws:config:ap-northeast-1:AccountID:config-
aggregator/config-aggregator-mocpsqhs",
            "CreationTime": 1517942461.442,
            "ConfigurationAggregatorName": "AccessibleAggregator",
            "AccountAggregationSources": [
                {
                    "AllAwsRegions": true,
                    "AccountIds": [
                        "AccountID1",
                        "AccountID2",
                        "AccountID3"
                    ]
                }
            ],
            "LastUpdatedTime": 1517942461.455
        }
    ]
}
```

```
{
    "ConfigurationAggregators": [
        {
            "ConfigurationAggregatorArn": "arn:aws:config:ap-northeast-1:AccountID:config-
aggregator/config-aggregator-pokxzldx",
            "CreationTime": 1517942461.442,
            "ConfigurationAggregatorName": "InAccessibleAggregator",
            "AccountAggregationSources": [
                {
                    "AllAwsRegions": true,
                    "AccountIds": [
                        "AccountID1",
                        "AccountID2",
                        "AccountID3"
                    ]
                }
            ],
            "LastUpdatedTime": 1517942461.455
        }
    ]
}
```

Note
For `account-aggregation-sources` enter a comma-separated list of AWS account IDs for which you want to aggregate data. Wrap the account IDs in square brackets, and be sure to escape quotation marks (for example, `"[{\"AccountIds\": [\"AccountID1\", \"AccountID2\",\"AccountID3\"],\"AllAwsRegions\": true}]"`).

The user then creates an IAM policy that denies access to `InAccessibleAggregator`.

```

{
        "Version": "2012-10-17",
        "Statement": [
        {
        "Sid": "ConfigReadOnly",
        "Effect": "Deny",
        "Action": [
            "config:PutConfigurationAggregator",
            "config:DescribePendingAggregationRequests",
            "config:DeletePendingAggregationRequest",
            "config:GetAggregateConfigRuleComplianceSummary",
            "config:DescribeAggregateComplianceByConfigRules",
            "config:GetAggregateComplianceDetailsByConfigRule",
            "config:DescribeConfigurationAggregators",
            "config:DescribeConfigurationAggregatorSourcesStatus",
            "config:DeleteConfigurationAggregator"
        ],
        "Resource": "arn:aws:config:ap-northeast-1:AccountID:config-aggregator/config-
aggregator-pokxzldx"
        }
    ]
}
```

Next, the user confirms that IAM policy works for restricting access to specific aggregator and rules.

```
aws configservice get-aggregate-compliance-details-by-config-rule --configuration-
aggregator-name InAccessibleAggregator --config-rule-name rule name --account-id AccountID
 --aws-region AwsRegion
```

The command returns an access denied exception:

```
An error occurred (AccessDeniedException) when calling the
 GetAggregateComplianceDetailsByConfigRule operation: User: arn:aws:iam::AccountID:user/ is
 not
authorized to perform: config:GetAggregateComplianceDetailsByConfigRule on resource:
 arn:aws:config:AwsRegion-1:AccountID:config-aggregator/config-aggregator-pokxzldx
```

With resource-level permissions, you can grant or deny access to perform specific actions on multi-account multi-region data aggregation.

Additional Information

To learn more about creating IAM users, groups, policies, and permissions, see Creating Your First IAM User and Administrators Group and Access Management in the *IAM User Guide*.

Supported Resource-Level Permissions for AWS Config Rules APIs Actions

Resource-level permissions refers to the ability to specify which resources users are allowed to perform actions on. AWS Config supports resource-level permissions for certain AWS Config Rules API actions. This means that for certain AWS Config Rules actions, you can control when users are allowed to use those actions based on conditions that have to be fulfilled, or specific resources that users are allowed to use.

The following table describes the AWS Config Rules API actions that currently support resource-level permissions, as well as the supported resources (and their ARNs) for each action. When specifying an ARN, you can use the * wildcard in your paths; for example, when you cannot or do not want to specify exact resource IDs.

> **Important**
> If an AWS Config Rules API action is not listed in this table, then it does not support resource-level permissions. If an AWS Config Rules action does not support resource-level permissions, you can grant users permissions to use the action, but you have to specify a * for the resource element of your policy statement.

API Action	Resources
DeleteConfigRule	Config Rule arn:aws:config:*region*:*accountID*:config-rule/config-rule-*ID*
DeleteEvaluationResults	Config Rule arn:aws:config:*region*:*accountID*:config-rule/config-rule-*ID*
DescribeComplianceByConfigRule	Config Rule arn:aws:config:*region*:*accountID*:config-rule/config-rule-*ID*
DescribeConfigRuleEvaluationStatus	Config Rule arn:aws:config:*region*:*accountID*:config-rule/config-rule-*ID*
DescribeConfigRules	Config Rule arn:aws:config:*region*:*accountID*:config-rule/config-rule-*ID*
GetComplianceDetailsByConfigRule	Config Rule arn:aws:config:*region*:*accountID*:config-rule/config-rule-*ID*
PutConfigRule	Config Rule arn:aws:config:*region*:*accountID*:config-rule/config-rule-*ID*
StartConfigRulesEvaluation	Config Rule arn:aws:config:*region*:*accountID*:config-rule/config-rule-*ID*

For example, you want to allow read access and deny write access to specfic rules to specific users.

In the first policy, you allow the AWS Config Rules read actions such as `DescribeConfigRules` and `DescribeConfigRuleEvaluationStatus` on the specified rules.

```
{
        "Version": "2012-10-17",
        "Statement": [
            {
                "Sid": "VisualEditor0",
                "Effect": "Allow",
                "Action": [
                    "config:DescribeConfigRules",
                    "config:StartConfigRulesEvaluation",
                    "config:DescribeComplianceByConfigRule",
                    "config:DescribeConfigRuleEvaluationStatus",
                    "config:GetComplianceDetailsByConfigRule"
                ],
                "Resource": [
                    "arn:aws:config:region:accountID:config-rule/config-rule-ID",
                    "arn:aws:config:region:accountID:config-rule/config-rule-ID"
                ]
            }
        ]
    }
```

In the second policy, you deny the AWS Config Rules write actions on the specific rule.

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Sid": "VisualEditor0",
            "Effect": "Deny",
            "Action": [
                "config:PutConfigRule",
                "config:DeleteConfigRule",
                "config:DeleteEvaluationResults"
               ],
            "Resource": "arn:aws:config:region:accountID:config-rule/config-rule-ID"
           }
      ]
   }
```

With resource-level permissions, you can allow read access and deny write access to perform specific actions on AWS Config Rules API actions.

Permissions for the IAM Role Assigned to AWS Config

An AWS Identity and Access Management (IAM) role lets you define a set of permissions. AWS Config assumes the role that you assign to it to write to your S3 bucket, publish to your SNS topic, and to make `Describe` or `List` API requests to get configuration details for your AWS resources. For more information on IAM roles, see IAM Roles in the *IAM User Guide*.

When you use the AWS Config console to create or update an IAM role, AWS Config automatically attaches the required permissions for you. For more information, see Setting Up AWS Config with the Console (p. 19).

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Creating IAM Role Policies

When you use the AWS Config console to create an IAM role, AWS Config automatically attaches the required permissions to the role for you.

If you are using the AWS CLI to set up AWS Config or you are updating an existing IAM role, you must manually update the policy to allow AWS Config to access your S3 bucket, publish to your SNS topic, and get configuration details about your resources.

Adding an IAM Trust Policy to your Role

You can create an IAM trust policy that enables AWS Config to assume a role and use it to track your resources. For more information about trust policies, see Assuming a Role in the *IAM User Guide*.

The following is an example trust policy for AWS Config roles:

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "",
      "Effect": "Allow",
      "Principal": {
        "Service": "config.amazonaws.com"
      },
      "Action": "sts:AssumeRole"
    }
  ]
}
```

IAM Role Policy for Amazon S3 Bucket

The following example policy grants AWS Config permissions to access your Amazon S3 bucket:

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

     {
       "Effect": "Allow",
       "Action": ["s3:PutObject"],
       "Resource": ["arn:aws:s3::: myBucketName/prefix/AWSLogs/myAccountID/*"],
       "Condition":
        {
          "StringLike":
            {
              "s3:x-amz-acl": "bucket-owner-full-control"
            }
        }
     },
     {
       "Effect": "Allow",
       "Action": ["s3:GetBucketAcl"],
       "Resource": "arn:aws:s3::: myBucketName "
     }
  ]
  }
```

IAM Role Policy for Amazon SNS Topic

The following example policy grants AWS Config permissions to access your SNS topic:

```
{
  "Version": "2012-10-17",
  "Statement":
   [
     {
      "Effect":"Allow",
      "Action":"sns:Publish",
      "Resource":"mySNStopicARN"
     }
    ]
}
```

IAM Role Policy for Getting Configuration Details

To record your AWS resource configurations, AWS Config requires IAM permissions to get the configuration details about your resources.

Use the AWS managed policy **AWSConfigRole** and attach it to the IAM role that you assign to AWS Config. AWS updates this policy each time AWS Config adds support for an AWS resource type, which means AWS Config will continue to have the required permissions to get configuration details as long as the role has this managed policy attached.

If you create or update a role with the console, AWS Config attaches the **AWSConfigRole** for you.

If you use the AWS CLI, use the `attach-role-policy` command and specify the Amazon Resource Name (ARN) for **AWSConfigRole**:

```
$ aws iam attach-role-policy --role-name myConfigRole --policy-arn arn:aws:iam::aws:policy/
service-role/AWSConfigRole
```

Troubleshooting for recording S3 buckets

If you configured AWS Config to record S3 buckets for your account, AWS Config records and delivers notifications when an S3 bucket is created, updated, or deleted.

If you configured AWS Config to record S3 buckets, and are not receiving configuration change notifications:

- Verify that the IAM role assigned to AWS Config has the `AWSConfigRole` managed policy.
- If you have S3 bucket policies attached to your buckets, verify that they allow AWS Config permission to record changes to your buckets.

If you have a custom policy for your S3 bucket, you can add the following policy to your existing bucket policy. This policy grants AWS Config permission to record the S3 bucket.

```
{
    "Sid": "AWSConfig_ReadConfiguration_Access",
    "Effect": "Allow",
    "Principal": {"AWS": "arn:aws:iam::myAccountID::role/config-role"},
    "Action": [
        "s3:GetAccelerateConfiguration",
        "s3:GetBucketAcl",
        "s3:GetBucketCORS",
        "s3:GetBucketLocation",
        "s3:GetBucketLogging",
        "s3:GetBucketNotification",
        "s3:GetBucketPolicy",
        "s3:GetBucketRequestPayment",
        "s3:GetBucketTagging",
        "s3:GetBucketVersioning",
        "s3:GetBucketWebsite",
        "s3:GetLifecycleConfiguration",
        "s3:GetReplicationConfiguration"
    ],
    "Resource": "arn:aws:s3:::myBucketName"
}
```

Permissions for the Amazon S3 Bucket

By default, all Amazon S3 buckets and objects are private. Only the resource owner and the AWS account that created the bucket can access that bucket and any objects it contains. The resource owner can, however, choose to grant access permissions to other resources and users. One way to do this is to write an access policy.

If AWS Config creates an S3 bucket for you automatically (for example, if you use the AWS Config console or use the `aws config subscribe` command to set up your delivery channel) or you choose an existing S3 bucket already existing in your account, these permissions are automatically added to the S3 bucket. However, if you specify an existing S3 bucket from another account, you must ensure that the S3 bucket has the correct permissions.

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Required Permissions for the Amazon S3 Bucket When Using IAM Roles

When AWS Config sends configuration information (history files and snapshots) to the Amazon S3 bucket in your account, it assumes the IAM role that you assigned when you set up AWS Config. When AWS Config sends to an Amazon S3 bucket in another account, it first attempts to use the IAM role, but this attempt fails if the access policy for the bucket does not grant `WRITE` access to the IAM role. In this event, AWS Config sends the information again, this time as the AWS Config service principal. Before the delivery can succeed, the access policy must grant `WRITE` access to the `config.amazonaws.com` principal name. AWS Config is then the owner of the objects it delivers to the S3 bucket. You must attach an access policy, mentioned in step 6 below to the Amazon S3 bucket in another account to grant AWS Config access to the Amazon S3 bucket.

Required Permissions for the Amazon S3 Bucket When Using Service-Linked Roles

If you set up AWS Config using a service-linked role, you need to attach an access policy, mentioned in step 6 below to the Amazon S3 bucket in your own account or another account to grant AWS Config access to the Amazon S3 bucket.

Granting AWS Config access to the Amazon S3 Bucket

Follow these steps to add an access policy to the Amazon S3 bucket in your own account or another account. The access policy allows AWS Config to send configuration information to the Amazon S3 bucket.

1. Sign in to the AWS Management Console using the account that has the S3 bucket.
2. Open the Amazon S3 console at https://console.aws.amazon.com/s3/.
3. Select the bucket that you want AWS Config to use to deliver configuration items, and then choose **Properties**.
4. Choose **Permissions**.
5. Choose **Edit Bucket Policy**.
6. Copy the following policy into the **Bucket Policy Editor** window:

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "AWSConfigBucketPermissionsCheck",
      "Effect": "Allow",
      "Principal": {
        "Service": [
         "config.amazonaws.com"
        ]
      },
      "Action": "s3:GetBucketAcl",
      "Resource": "arn:aws:s3:::targetBucketName"
    },
    {
      "Sid": " AWSConfigBucketDelivery",
      "Effect": "Allow",
      "Principal": {
        "Service": [
         "config.amazonaws.com"
        ]
      },
      "Action": "s3:PutObject",
      "Resource": "arn:aws:s3:::targetBucketName/[optional] prefix/
AWSLogs/sourceAccountID-WithoutHyphens/Config/*",
      "Condition": {
        "StringEquals": {
          "s3:x-amz-acl": "bucket-owner-full-control"
        }
      }
    }
  ]
}
```

7. Substitute the following values in the bucket policy:

- *`targetBucketName`* – The name of the Amazon S3 bucket to which AWS Config will deliver configuration items.
- *`[optional] prefix`* – An optional addition to the Amazon S3 object key that helps create a folder-like organization in the bucket.
- *`sourceAccountID-WithoutHyphens`* – The ID of the account for which AWS Config will deliver configuration items to the target bucket.

8. Choose **Save** and then **Close**.

Permissions for the Amazon SNS Topic

Use the information in this topic only if you want to configure AWS Config to deliver Amazon SNS topics owned by your account or by a different account. AWS Config must have permissions to send notifications to an Amazon SNS topic.

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Required Permissions for the Amazon SNS Topic When Using IAM Roles

You can attach a permission policy to the Amazon SNS topic owned by a different account. If you want to use an Amazon SNS topic from another account, make sure to attach the following policy to an existing Amazon SNS topic.

```
 {
  "Id": "Policy1415489375392",
  "Statement": [
    {
      "Sid": "AWSConfigSNSPolicy20150201",
      "Action": [
        "SNS:Publish"
      ],
      "Effect": "Allow",
      "Resource": "arn:aws:sns:region:account-id:myTopic",
      "Principal": {
        "AWS": [
          "account-id1",
          "account-id2",
          "account-id3",
        ]
      }
    }
  ]
}
```

For the `Resource` key, *`account-id`* is the account number of the topic owner. For *`account-id1`*, *`account-id2`*, and *`account-id3`*, use the AWS accounts that will send data to an Amazon SNS topic. You must substitute appropriate values for *`region`* and *`myTopic`*.

Required Permissions for the Amazon SNS Topic When Using Service-Linked Roles

If you set up AWS Config using a service-linked role, you need to attach a permission policy to the Amazon SNS topic. If you want to use an Amazon SNS topic from your own account, make sure to attach the following policy to an existing Amazon SNS topic.

```
{
  "Id": "Policy_ID",
  "Statement": [
    {
      "Sid": "AWSConfigSNSPolicy",
      "Effect": "Allow",
      "Principal": {
        "AWS": "[configRoleArn]"
      },
      "Action": "SNS:Publish",
      "Resource": "arn:aws:sns:region:account-id:myTopic"
    }
  ]
}
```

You must substitute appropriate values for *`region`*, *`account-id`*, and *`myTopic`*.

> **Note**
> AWS Config does not recommend using a service-linked role when using Amazon SNS topic from other accounts.

Troubleshooting for the Amazon SNS Topic

AWS Config must have permissions to send notifications to an Amazon SNS topic. If an Amazon SNS topic cannot receive notifications, verify that the IAM role that AWS Config was assuming must have `sns:publish` permissions.

Evaluating Resources with Rules

Use AWS Config to evaluate the configuration settings of your AWS resources. You do this by creating AWS Config rules, which represent your ideal configuration settings. AWS Config provides customizable, predefined rules called managed rules to help you get started. You can also create your own custom rules. While AWS Config continuously tracks the configuration changes that occur among your resources, it checks whether these changes violate any of the conditions in your rules. If a resource violates a rule, AWS Config flags the resource and the rule as *noncompliant*.

For example, when an EC2 volume is created, AWS Config can evaluate the volume against a rule that requires volumes to be encrypted. If the volume is not encrypted, AWS Config flags the volume and the rule as noncompliant. AWS Config can also check all of your resources for account-wide requirements. For example, AWS Config can check whether the number of EC2 volumes in an account stays within a desired total, or whether an account uses AWS CloudTrail for logging.

The AWS Config console shows the compliance status of your rules and resources. You can see how your AWS resources comply overall with your desired configurations, and learn which specific resources are noncompliant. You can also use the AWS CLI, the AWS Config API, and AWS SDKs to make requests to the AWS Config service for compliance information.

By using AWS Config to evaluate your resource configurations, you can assess how well your resource configurations comply with internal practices, industry guidelines, and regulations.

For regions that support AWS Config rules, see AWS Config Regions and Endpoints in the *Amazon Web Services General Reference*.

You can create up to 50 AWS Config rules per region in your account. For more information, see AWS Config Limits in the *Amazon Web Services General Reference*.

You can also create custom rules to evaluate additional resources that AWS Config doesn't yet record. For more information, see Evaluating Additional Resource Types (p. 151).

Topics

Viewing Configuration Compliance

You can use the AWS Config console, AWS CLI, or AWS Config API to view the compliance state of your rules and resources.

To view compliance (console)

1. Sign in to the AWS Management Console and open the AWS Config console at https://console.aws.amazon.com/config/.

2. In the AWS Management Console menu, verify that the region selector is set to a region that supports AWS Config rules. For the list of supported regions, see AWS Config Regions and Endpoints in the *Amazon Web Services General Reference*.
3. In the navigation pane, choose **Rules**. The console shows the **Rules** page, which lists your rules and the compliance status of each.
4. Choose a rule to view its **Rule details** page. This page shows the rule's configuration, its status, and any AWS resources that do not comply with it.
5. If the **Rule details** shows any noncompliant resources, choose the **Config timeline** icon (⟲) for a resource to see its configuration timeline page. The page shows the configuration settings that AWS Config captured when it detected that the resource was noncompliant. This information can help you determine why the resource fails to comply with the rule. For more information, see Viewing Configuration Details (p. 33).

You can also view the compliance of your resources by looking them up on the **Resource inventory** page. For more information, see Looking Up Resources That Are Discovered by AWS Config (p. 32).

Example To view compliance (AWS CLI)

To view compliance, use any of the following CLI commands:

- To see the compliance state of each of your rules, use the `describe-compliance-by-config-rule` command, as shown in the following example:

```
$ aws configservice describe-compliance-by-config-rule
{
    "ComplianceByConfigRules": [
        {
            "Compliance": {
                "ComplianceContributorCount": {
                    "CappedCount": 2,
                    "CapExceeded": false
                },
                "ComplianceType": "NON_COMPLIANT"
            },
            "ConfigRuleName": "instances-in-vpc"
        },
        {
            "Compliance": {
                "ComplianceType": "COMPLIANT"
            },
            "ConfigRuleName": "restricted-common-ports"
        },
...
```

  For each rule that has a compliance type of `NON_COMPLIANT`, AWS Config returns the number of noncompliant resources for the `CappedCount` parameter.

- To see the compliance state of each resource that AWS Config evaluates for a specific rule, use the `get-compliance-details-by-config-rule` command, as shown in the following example:

```
$ aws configservice get-compliance-details-by-config-rule --config-rule-
name ConfigRuleName{
    "EvaluationResults": [
        {
            "EvaluationResultIdentifier": {
                "OrderingTimestamp": 1443610576.349,
                "EvaluationResultQualifier": {
                    "ResourceType": "AWS::EC2::Instance",
                    "ResourceId": "i-nnnnnnnn",
                    "ConfigRuleName": "ConfigRuleName"
                }
            },
            "ResultRecordedTime": 1443751424.969,
            "ConfigRuleInvokedTime": 1443751421.208,
            "ComplianceType": "COMPLIANT"
        },
        {
            "EvaluationResultIdentifier": {
                "OrderingTimestamp": 1443610576.349,
                "EvaluationResultQualifier": {
                    "ResourceType": "AWS::EC2::Instance",
                    "ResourceId": "i-nnnnnnnn",
                    "ConfigRuleName": "ConfigRuleName"
                }
            },
            "ResultRecordedTime": 1443751425.083,
            "ConfigRuleInvokedTime": 1443751421.301,
            "ComplianceType": "NON_COMPLIANT"
        },
...
```

- To see the compliance state for each AWS resource of a specific type, use the `describe-compliance-by-resource` command, as shown in the following example:

```
$ aws configservice describe-compliance-by-resource --resource-type AWS::EC2::Instance
{
    "ComplianceByResources": [
        {
            "ResourceType": "AWS::EC2::Instance",
            "ResourceId": "i-nnnnnnnn",
            "Compliance": {
                "ComplianceContributorCount": {
                    "CappedCount": 1,
                    "CapExceeded": false
                },
                "ComplianceType": "NON_COMPLIANT"
            }
        },
        {
            "ResourceType": "AWS::EC2::Instance",
            "ResourceId": "i-nnnnnnnn",
            "Compliance": {
                "ComplianceType": "COMPLIANT"
            }
        },
...
```

- To see the compliance details of an individual AWS resource, use the `get-compliance-details-by-resource` command.

```
$ aws configservice get-compliance-details-by-resource --resource-type AWS::EC2::Instance
 --resource-id i-nnnnnnnn
{
    "EvaluationResults": [
        {
            "EvaluationResultIdentifier": {
                "OrderingTimestamp": 1443610576.349,
                "EvaluationResultQualifier": {
                    "ResourceType": "AWS::EC2::Instance",
                    "ResourceId": "i-nnnnnnnn",
                    "ConfigRuleName": "instances-in-vpc"
                }
            },
            "ResultRecordedTime": 1443751425.083,
            "ConfigRuleInvokedTime": 1443751421.301,
            "ComplianceType": "NON_COMPLIANT"
        }
    ]
}
```

Example To view compliance (AWS Config API)

To view compliance, use any of the following API actions:

- To see the compliance state of each of your rules, use the DescribeComplianceByConfigRule action.
- To see the compliance state of each resource that AWS Config evaluates for a specific rule, use the GetComplianceDetailsByConfigRule action.
- To see the compliance state for each AWS resource of a specific type, use the DescribeComplianceByResource action.
- To see the compliance details of an individual AWS resource, use the GetComplianceDetailsByResource action. The details include which AWS Config rules evaluated the resource, when each rule last evaluated it, and whether the resource complies with each rule.

Specifying Triggers for AWS Config Rules

When you add a rule to your account, you can specify when you want AWS Config to run the rule; this is called a *trigger*. AWS Config evaluates your resource configurations against the rule when the trigger occurs.

Contents

Trigger types

There are two types of triggers:

Configuration changes

AWS Config runs evaluations for the rule when certain types of resources are created, changed, or deleted.

You choose which resources trigger the evaluation by defining the rule's *scope*. The scope can include the following:

- One or more resource types
- A combination of a resource type and a resource ID
- A combination of a tag key and value
- When any recorded resource is created, updated, or deleted

AWS Config runs the evaluation when it detects a change to a resource that matches the rule's scope. You can use the scope to constrain which resources trigger evaluations. Otherwise, evaluations are triggered when any recorded resource changes.

Periodic

AWS Config runs evaluations for the rule at a frequency that you choose (for example, every 24 hours).

If you choose configuration changes and periodic, AWS Config invokes your Lambda function when it detects a configuration change and also at the frequency that you specify.

Example rules with triggers

Example rule with configuration change trigger

1. You add the AWS Config managed rule, `S3_BUCKET_LOGGING_ENABLED`, to your account to check whether your Amazon S3 buckets have logging enabled.
2. The trigger type for the rule is configuration changes. AWS Config runs the evaluations for the rule when an Amazon S3 bucket is created, changed, or deleted.
3. When a bucket is updated, the configuration change triggers the rule and AWS Config evaluates whether the bucket is compliant against the rule.

Example rule with periodic trigger

1. You add the AWS Config managed rule, `IAM_PASSWORD_POLICY`, to your account. The rule checks whether the password policy for your IAM users comply with your account policy, such as requiring a minimum length or requiring specific characters.
2. The trigger type for the rule is periodic. AWS Config runs evaluation for the rule at a frequency that you specify, such as every 24 hours.
3. Every 24 hours, the rule is triggered and AWS Config evaluates whether the passwords for your IAM users are compliant against the rule.

Example rule with configuration change and periodic triggers

1. You create a custom rule that evaluates whether CloudTrail trails in your account are turned on and logging for all regions.
2. You want AWS Config to run evaluations for the rule every time a trail is created, updated, or deleted. You also want AWS Config to run the rule every 12 hours.
3. For the trigger type, choose configuration changes and periodic.

Rule evaluations when the configuration recorder is turned off

If you turn off the configuration recorder, AWS Config stops recording changes to your resource configurations. This affects your rule evaluations in the following ways:

- Rules with a periodic trigger continue to run evaluations at the specified frequency.
- Rules with a configuration change trigger do not run evaluations.
- Rules with both trigger types run evaluations only at the specified frequency. The rules do not run evaluations for configuration changes.
- If you run an on-demand evaluation for a rule with a configuration change trigger, the rule evaluates the last known state of the resource, which is the last recorded configuration item. .

AWS Config Managed Rules

AWS Config provides *AWS managed rules*, which are predefined, customizable rules that AWS Config uses to evaluate whether your AWS resources comply with common best practices. For example, you could use a managed rule to quickly start assessing whether your Amazon Elastic Block Store (Amazon EBS) volumes are encrypted or whether specific tags are applied to your resources. You can set up and activate these rules without writing the code to create an AWS Lambda function, which is required if you want to create custom rules. The AWS Config console guides you through the process of configuring and activating a managed rule. You can also use the AWS Command Line Interface or AWS Config API to pass the JSON code that defines your configuration of a managed rule.

You can customize the behavior of a managed rule to suit your needs. For example, you can define the rule's scope to constrain which resources trigger an evaluation for the rule, such as EC2 instances or volumes. You can customize the rule's parameters to define attributes that your resources must have to comply with the rule. For example, you can customize a parameter to specify that your security group should block incoming traffic to a specific port number.

After you activate a rule, AWS Config compares your resources to the conditions of the rule. After this initial evaluation, AWS Config continues to run evaluations each time one is triggered. The evaluation triggers are defined as part of the rule, and they can include the following types:

- **Configuration changes** – AWS Config triggers the evaluation when any resource that matches the rule's scope changes in configuration. The evaluation runs after AWS Config sends a configuration item change notification.
- **Periodic** – AWS Config runs evaluations for the rule at a frequency that you choose (for example, every 24 hours).

The AWS Config console shows which resources comply with the rule and which rules are being followed. For more information, see Viewing Configuration Compliance (p. 93).

Topics

List of AWS Config Managed Rules

AWS Config provides the following managed rules.

Compute

- approved-amis-by-id (p. 102)
- approved-amis-by-tag (p. 102)
- autoscaling-group-elb-healthcheck-required (p. 103)
- desired-instance-tenancy (p. 110)
- desired-instance-type (p. 111)
- ebs-optimized-instance (p. 113)
- ec2-instance-detailed-monitoring-enabled (p. 113)
- ec2-instance-managed-by-ssm (p. 114)
- ec2-instances-in-vpc (p. 114)
- ec2-managedinstance-applications-blacklisted (p. 115)

- ec2-managedinstance-applications-required (p. 115)
- ec2-managedinstance-association-compliance-status-check (p. 116)
- ec2-managedinstance-inventory-blacklisted (p. 116)
- ec2-managedinstance-patch-compliance-status-check (p. 117)
- ec2-managedinstance-platform-check (p. 117)
- ec2-volume-inuse-check (p. 118)
- eip-attached (p. 118)
- encrypted-volumes (p. 121)
- elb-acm-certificate-required (p. 119)
- elb-custom-security-policy-ssl-check (p. 119)
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- elb-predefined-security-policy-ssl-check (p. 120)
- lambda-function-settings-check (p. 128)
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- restricted-common-ports (p. 134)
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Database

- db-instance-backup-enabled (p. 109)
- dynamodb-autoscaling-enabled (p. 111)
- dynamodb-table-encryption-enabled (p. 112)
- dynamodb-throughput-limit-check (p. 112)
- rds-instance-public-access-check (p. 130)
- rds-multi-az-support (p. 130)
- rds-snapshots-public-prohibited (p. 131)
- rds-storage-encrypted (p. 131)
- redshift-cluster-configuration-check (p. 132)
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Management Tools

- cloud-trail-cloud-watch-logs-enabled (p. 104)
- cloud-trail-encryption-enabled (p. 105)
- cloudtrail-enabled (p. 104)
- cloud-trail-log-file-validation-enabled (p. 105)
- cloudformation-stack-notification-check (p. 103)
- cloudwatch-alarm-action-check (p. 106)
- cloudwatch-alarm-resource-check (p. 107)
- cloudwatch-alarm-settings-check (p. 107)
- codebuild-project-envvar-awscred-check (p. 109)
- codebuild-project-source-repo-url-check (p. 109)
- multi-region-cloud-trail-enabled (p. 129)
- required-tags (p. 133)

Network and Content Delivery

- vpc-default-security-group-closed (p. 143)
- vpc-flow-logs-enabled (p. 143)

Security, Identity & Compliance

- access-keys-rotated (p. 101)
- acm-certificate-expiration-check (p. 101)
- cmk-backing-key-rotation-enabled (p. 108)
- fms-webacl-resource-policy-check (p. 121)
- fms-webacl-rulegroup-association-check (p. 122)
- guardduty-enabled-centralized (p. 123)
- iam-group-has-users-check (p. 123)
- iam-password-policy (p. 124)
- iam-policy-blacklisted-check (p. 124)
- iam-policy-no-statements-with-admin-access (p. 125)
- iam-role-managed-policy-check (p. 125)
- iam-root-access-key-check (p. 126)
- iam-user-group-membership-check (p. 126)
- iam-user-no-policies-check (p. 127)
- root-account-mfa-enabled (p. 135)
- iam-user-unused-credentials-check (p. 127)
- mfa-enabled-for-iam-console-access (p. 129)
- root-account-mfa-enabled (p. 135)
- root-account-hardware-mfa-enabled (p. 135)

Storage

- s3-blacklisted-actions-prohibited (p. 136)*
- s3-bucket-policy-not-more-permissive (p. 136)*
- s3-bucket-logging-enabled (p. 139)
- s3-bucket-public-read-prohibited (p. 139)*
- s3-bucket-public-write-prohibited (p. 140)*
- s3-bucket-replication-enabled (p. 140)
- s3-bucket-server-side-encryption-enabled (p. 141)*
- s3-bucket-ssl-requests-only (p. 141)*
- s3-bucket-versioning-enabled (p. 142)

*This rule uses automated reasoning tools (ART) to evaluate IAM permissions and resource policies for correctness.

The following rules are not available in the China (Beijing) (cn-north-1) region:

- acm-certificate-expiration-check
- cmk-backing-key-rotation-enabled
- codebuild-project-envvar-awscred-check

- codebuild-project-source-repo-url-check
- elb-acm-certificate-required
- encrypted-volumes
- fms-webacl-resource-policy-check
- fms-webacl-rulegroup-association-check
- guardduty-enabled-centralized
- lambda-function-public-access-prohibited
- rds-storage-encrypted
- root-account-mfa-enabled
- S3-blacklisted-actions-prohibited
- S3-bucket-policy-not-more-permissive
- s3-bucket-public-read-prohibited
- s3-bucket-public-write-prohibited
- s3-bucket-server-side-encryption-enabled
- s3-bucket-ssl-requests-only

acm-certificate-expiration-check

Checks whether ACM Certificates in your account are marked for expiration within the specified number of days. Certificates provided by ACM are automatically renewed. ACM does not automatically renew certificates that you import.

Identifier: ACM_CERTIFICATE_EXPIRATION_CHECK

Trigger type: Configuration changes and periodic

Parameters:

daysToExpiration

> Specify the number of days before the rule flags the ACM Certificate as NON_COMPLIANT.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

access-keys-rotated

Checks whether the active access keys are rotated within the number of days specified in `maxAccessKeyAge`. The rule is NON_COMPLIANT if the access keys have not been rotated for more than `maxAccessKeyAge` number of days.

Identifier: ACCESS_KEYS_ROTATED

Trigger type: Periodic

Parameters:

maxAccessKeyAge

> Maximum number of days within which the access keys must be rotated. The default value is 90 days.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

approved-amis-by-id

Checks whether running instances are using specified AMIs. Specify a list of approved AMI IDs. Running instances with AMIs that are not on this list are NON_COMPLIANT.

Identifier: APPROVED_AMIS_BY_ID

Trigger type: Configuration changes

Parameters:

amiIds

> The AMI IDs (comma-separated list of up to 10).

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

approved-amis-by-tag

Checks whether running instances are using specified AMIs. Specify the tags that identify the AMIs. Running instances with AMIs that don't have at least one of the specified tags are NON_COMPLIANT.

Identifier: APPROVED_AMIS_BY_TAG

Trigger type: Configuration changes

Parameters:

amisByTagKeyAndValue

The AMIs by tag (comma-separated list up to 10; for example, "tag-key:tag-value").

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

autoscaling-group-elb-healthcheck-required

Checks whether your Auto Scaling groups that are associated with a load balancer are using Elastic Load Balancing health checks.

Identifier: AUTOSCALING_GROUP_ELB_HEALTHCHECK_REQUIRED

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

cloudformation-stack-notification-check

Checks whether your CloudFormation stacks are sending event notifications to an SNS topic. Optionally checks whether specified SNS topics are used.

Identifier: CLOUDFORMATION_STACK_NOTIFICATION_CHECK

Trigger type: Configuration changes

Parameters:

snsTopic1

SNS Topic ARN.

snsTopic2

SNS Topic ARN.

snsTopic3

SNS Topic ARN.

snsTopic4

SNS Topic ARN.

snsTopic5

SNS Topic ARN.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

cloud-trail-cloud-watch-logs-enabled

Checks whether AWS CloudTrail trails are configured to send logs to Amazon CloudWatch Logs. The trail is NON_COMPLIANT if the `CloudWatchLogsLogGroupArn` property of the trail is empty.

Identifier: CLOUD_TRAIL_CLOUD_WATCH_LOGS_ENABLED

Trigger type: Periodic

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

cloudtrail-enabled

Checks whether AWS CloudTrail is enabled in your AWS account. Optionally, you can specify which S3 bucket, SNS topic, and Amazon CloudWatch Logs ARN to use.

Identifier: CLOUD_TRAIL_ENABLED

Trigger type: Periodic

Parameters:

s3BucketName

The name of the S3 bucket for AWS CloudTrail to deliver log files to.

snsTopicArn

The ARN of the SNS topic for AWS CloudTrail to use for notifications.

cloudWatchLogsLogGroupArn

The ARN of the Amazon CloudWatch log group for AWS CloudTrail to send data to.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

cloud-trail-encryption-enabled

Checks whether AWS CloudTrail is configured to use the server side encryption (SSE) AWS Key Management Service (AWS KMS) customer master key (CMK) encryption. The rule is COMPLIANT if the `KmsKeyId` is defined.

Identifier: CLOUD_TRAIL_ENCRYPTION_ENABLED

Trigger type: Periodic

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

cloud-trail-log-file-validation-enabled

Checks whether AWS CloudTrail creates a signed digest file with logs. AWS recommends that the file validation must be enabled on all trails. The rule is NON_COMPLIANT if the validation is not enabled.

Identifier: CLOUD_TRAIL_LOG_FILE_VALIDATION_ENABLED

Trigger type: Periodic

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

cloudwatch-alarm-action-check

Checks whether CloudWatch alarms have at least one alarm action, one `INSUFFICIENT_DATA` action, or one `OK` action enabled. Optionally, checks whether any of the actions matches one of the specified ARNs.

Identifier: CLOUDWATCH_ALARM_ACTION_CHECK

Trigger type: Configuration changes

Parameters:

alarmActionRequired

Alarms have at least one action.

The default value is `true`.

insufficientDataActionRequired

Alarms have at least one action when the alarm transitions to the `INSUFFICIENT_DATA` state from any other state.

The default value is `true`.

okActionRequired

Alarms have at least one action when the alarm transitions to an `OK` state from any other state.

The default value is `false`.

action1

The action to execute, specified as an ARN.

action2

The action to execute, specified as an ARN.

action3

The action to execute, specified as an ARN.

action4

The action to execute, specified as an ARN.

action5

The action to execute, specified as an ARN.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

cloudwatch-alarm-resource-check

Checks whether the specified resource type has a CloudWatch alarm for the specified metric. For resource type, you can specify EBS volumes, EC2 instances, RDS clusters, or S3 buckets.

Identifier:CLOUDWATCH_ALARM_RESOURCE_CHECK

Trigger type: Periodic

Parameters:

resourceType

AWS resource type. The value can be one of the following:

- AWS::EC2::Volume
- AWS::EC2::Instance
- AWS::S3::Bucket

metricName

The name of the metric associated with the alarm (for example, "CPUUtilization" for EC2 instances).

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

cloudwatch-alarm-settings-check

Checks whether CloudWatch alarms with the given metric name have the specified settings.

Identifier: CLOUDWATCH_ALARM_SETTINGS_CHECK

Trigger type: Configuration changes

Parameters:

metricName

The name for the metric associated with the alarm.

threshold

The value against which the specified statistic is compared.

evaluationPeriod

The number of periods in which data is compared to the specified threshold.

period

The period, in seconds, during which the specified statistic is applied.

The default value is 300 seconds.

comparisonOperator

The operation for comparing the specified statistic and threshold (for example, "GreaterThanThreshold").

statistic

The statistic for the metric associated with the alarm (for example, "Average" or "Sum").

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

cmk-backing-key-rotation-enabled

Checks that key rotation is enabled for each customer master key (CMK). The rule is COMPLIANT, if the key rotation is enabled for specific key object. The rule is not applicable to CMKs that have imported key material.

Identifier: CMK_BACKING_KEY_ROTATION_ENABLED

Trigger type: Periodic

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

codebuild-project-envvar-awscred-check

Checks whether the project contains environment variables AWS_ACCESS_KEY_ID and AWS_SECRET_ACCESS_KEY. The rule is NON_COMPLIANT when the project environment variables contains plaintext credentials.

Identifier: CODEBUILD_PROJECT_ENVVAR_AWSCRED_CHECK

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

codebuild-project-source-repo-url-check

Checks whether the GitHub or Bitbucket source repository URL contains either personal access tokens or user name and password. The rule is COMPLIANT with the usage of OAuth to grant authorization for accessing GitHub or Bitbucket repositories.

Identifier: CODEBUILD_PROJECT_SOURCE_REPO_URL_CHECK

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

db-instance-backup-enabled

Checks whether RDS DB instances have backups enabled. Optionally, the rule checks the backup retention period and the backup window.

Identifier: DB_INSTANCE_BACKUP_ENABLED

Trigger type: Configuration changes

Parameters:

backupRetentionPeriod

Retention period for backups.

preferredBackupWindow

Time range in which backups are created.

checkReadReplicas

Checks whether RDS DB instances have backups enabled for read replicas.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

desired-instance-tenancy

Checks instances for specified tenancy. Specify AMI IDs to check instances that are launched from those AMIs or specify host IDs to check whether instances are launched on those Dedicated Hosts. Separate multiple ID values with commas.

Identifier: DESIRED_INSTANCE_TENANCY

Trigger type: Configuration changes

Parameters:

tenancy

The desired tenancy of the instances. Valid values are `DEDICATED`, `HOST`, and `DEFAULT`.

imageId

The rule evaluates instances launched only from the AMI with the specified ID. Separate multiple AMI IDs with commas.

hostId

The ID of the Amazon EC2 Dedicated Host on which the instances are meant to be launched. Separate multiple host IDs with commas.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

desired-instance-type

Checks whether your EC2 instances are of the specified instance types.

For a list of supported Amazon EC2 instance types, see Instance Types in the *Amazon EC2 User Guide for Linux Instances*.

Identifier: DESIRED_INSTANCE_TYPE

Trigger type: Configuration changes

Parameters:

instanceType

> Comma-separated list of EC2 instance types (for example, "t2.small, m4.large, i2.xlarge").

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

dynamodb-autoscaling-enabled

Checks whether Auto Scaling is enabled on your DynamoDB tables and/or global secondary indexes. Optionally you can set the read and write capacity units for the table or global secondary index.

Identifier: DYNAMODB_AUTOSCALING_ENABLED

Trigger type: Periodic

Parameters:

minProvisionedReadCapacity

> The minimum number of units that should be provisioned with read capacity in the Auto Scaling group.

minProvisionedWriteCapacity

> The minimum number of units that should be provisioned with write capacity in the Auto Scaling group.

maxProvisionedReadCapacity

> The maximum number of units that should be provisioned with read capacity in the Auto Scaling group.

maxProvisionedWriteCapacity

The maximum number of units that should be provisioned with write capacity in the Auto Scaling group.

targetReadUtilization

The target utilization percentage for read capacity. Target utilization is expressed in terms of the ratio of consumed capacity to provisioned capacity.

targetWriteUtilization

The target utilization percentage for write capacity. Target utilization is expressed in terms of the ratio of consumed capacity to provisioned capacity.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

dynamodb-table-encryption-enabled

Checks whether the Amazon DynamoDB tables are encrypted and checks their status. The rule is COMPLIANT if the status is enabled or enabling.

Identifier: DYNAMODB_TABLE_ENCRYPTION_ENABLED

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

dynamodb-throughput-limit-check

Checks whether provisioned DynamoDB throughput is approaching the maximum limit for your account. By default, the rule checks if provisioned throughput exceeds a threshold of 80% of your account limits.

Identifier: DYNAMODB_THROUGHPUT_LIMIT_CHECK

Trigger type: Periodic

Parameters:

accountRCUThresholdPercentage

Percentage of provisioned read capacity units for your account. When this value is reached, the rule is marked as NON_COMPLIANT.

accountWCUThresholdPercentage

Percentage of provisioned write capacity units for your account. When this value is reached, the rule is marked as NON_COMPLIANT.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

ebs-optimized-instance

Checks whether EBS optimization is enabled for your EC2 instances that can be EBS-optimized.

Identifer: EBS_OPTIMIZED_INSTANCE

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

ec2-instance-detailed-monitoring-enabled

Checks whether detailed monitoring is enabled for EC2 instances.

Identifier: EC2_INSTANCE_DETAILED_MONITORING_ENABLED

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

ec2-instance-managed-by-ssm

Checks whether the Amazon EC2 instances in your account are managed by AWS Systems Manager.

Identifier:EC2_INSTANCE_MANAGED_BY_SSM

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

ec2-instances-in-vpc

Checks whether your EC2 instances belong to a virtual private cloud (VPC). Optionally, you can specify the VPC ID to associate with your instances.

Identifier: INSTANCES_IN_VPC

Trigger type: Configuration changes

Parameters:

vpcId

> The ID of the VPC that contains these instances.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

ec2-managedinstance-applications-blacklisted

Checks that none of the specified applications are installed on the instance. Optionally, specify the application version. Newer versions of the application will not be blacklisted. You can also specify the platform to apply the rule only to instances running that platform.

Identifier: EC2_MANAGEDINSTANCE_APPLICATIONS_BLACKLISTED

Trigger type: Configuration changes

Parameters:

applicationNames

> Comma-separated list of application names. Optionally, specify versions appended with ":" (for example, "Chrome:0.5.3, FireFox").
>
> **Note** The application names must be an exact match. For example, use `firefox` on Linux or `firefox-compat` on Amazon Linux. In addition, AWS Config does not currently support wildcards for the *applicationNames* parameter (for example, `firefox*`).

platformType

> The platform type (for example, "Linux" or "Windows").

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

ec2-managedinstance-applications-required

Checks whether all of the specified applications are installed on the instance. Optionally, specify the minimum acceptable version. You can also specify the platform to apply the rule only to instances running that platform.

> **Note**
> Ensure that SSM agent is running on the EC2 instance and configure SSM agents.

Identifier: EC2_MANAGEDINSTANCE_APPLICATIONS_REQUIRED

Trigger type: Configuration changes

Parameters:

applicationNames

Comma-separated list of application names. Optionally, specify versions appended with ":" (for example, "Chrome:0.5.3, FireFox").

Note The application names must be an exact match. For example, use `firefox` on Linux or `firefox-compat` on Amazon Linux. In addition, AWS Config does not currently support wildcards for the *applicationNames* parameter (for example, `firefox*`).

platformType

The platform type (for example, "Linux" or "Windows").

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

ec2-managedinstance-association-compliance-status-check

Checks whether the compliance status of the Amazon EC2 Systems Manager association compliance is COMPLIANT or NON_COMPLIANT after the association execution on the instance. The rule is COMPLIANT if the field status is COMPLIANT.

Identifier: EC2_MANAGEDINSTANCE_ASSOCIATION_COMPLIANCE_STATUS_CHECK

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

ec2-managedinstance-inventory-blacklisted

Checks whether instances managed by AWS Systems Manager are configured to collect blacklisted inventory types.

Identifier: EC2_MANAGEDINSTANCE_INVENTORY_BLACKLISTED

Trigger type: Configuration changes

Parameters:

inventoryNames

Comma-separated list of Systems Manager inventory types (for example, "AWS:Network, AWS:WindowsUpdate").

platformType

Platform type (for example, “Linux”).

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

ec2-managedinstance-patch-compliance-status-check

Checks whether the compliance status of the Amazon EC2 Systems Manager patch compliance is COMPLIANT or NON_COMPLIANT after the patch installation on the instance. The rule is COMPLIANT if the field status is COMPLIANT.

Identifier: EC2_MANAGEDINSTANCE_PATCH_COMPLIANCE_STATUS_CHECK

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

ec2-managedinstance-platform-check

Checks whether EC2 managed instances have the desired configurations.

Identifier: EC2_MANAGEDINSTANCE_PLATFORM_CHECK

Trigger type: Configuration changes

Parameters:

agentVersion

The version of the agent (for example, "2.0.433.0").

platformType

The platform type (for example, "Linux" or "Windows").

platformVersion

The version of the platform (for example, "2016.09").

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

ec2-volume-inuse-check

Checks whether EBS volumes are attached to EC2 instances. Optionally checks if EBS volumes are marked for deletion when an instance is terminated.

Identifier: EC2_VOLUME_INUSE_CHECK

Trigger type: Configuration changes

Parameters:

deleteOnTermination

EBS volumes are marked for deletion when an instance is terminated.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

eip-attached

Checks whether all Elastic IP addresses that are allocated to a VPC are attached to EC2 instances or in-use elastic network interfaces (ENIs).

Results might take up to 6 hours to become available after an evaluation occurs.

Identifier: EIP_ATTACHED

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

elb-acm-certificate-required

Checks whether the Classic Load Balancers use SSL certificates provided by AWS Certificate Manager. To use this rule, use an SSL or HTTPS listener with your Classic Load Balancer. This rule is only applicable to Classic Load Balancers. This rule does not check Application Load Balancers and Network Load Balancers.

Identifier: ELB_ACM_CERTIFICATE_REQUIRED

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

elb-custom-security-policy-ssl-check

Checks whether your Classic Load Balancer SSL listeners are using a custom policy. The rule is only applicable if there are SSL listeners for the Classic Load Balancer.

Identifier: ELB_CUSTOM_SECURITY_POLICY_SSL_CHECK

Trigger type: Configuration changes

Parameters:

ssl-protocols-and-ciphers

Comma-separated list of ciphers and protocol.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

elb-logging-enabled

Checks whether the Application Load Balancers and the Classic Load Balancers have logging enabled. The rule is NON_COMPLIANT if the the `access_logs.s3.enabled` is true and `access_logs.S3.bucket` is equal to the s3BucketName that you provided.

Identifier: ELB_LOGGING_ENABLED

Trigger type: Configuration changes

Parameters:

s3BucketNames (optional)

> Comma-separated list of Amazon S3 bucket names for Elastic Load Balancing to deliver the log files.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

elb-predefined-security-policy-ssl-check

Checks whether your Classic Load Balancer SSL listeners are using a predefined policy. The rule is only applicable if there are SSL listeners for the Classic Load Balancer.

Identifier: ELB_PREDEFINED_SECURITY_POLICY_SSL_CHECK

Trigger type: Configuration changes

Parameters:

predefined-policy-name

> Name of the predefined policy.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

encrypted-volumes

Checks whether the EBS volumes that are in an attached state are encrypted. If you specify the ID of a KMS key for encryption using the kmsId parameter, the rule checks if the EBS volumes in an attached state are encrypted with that KMS key.

For more information, see Amazon EBS Encryption in the *Amazon EC2 User Guide for Linux Instances*.

Identifier: ENCRYPTED_VOLUMES

Trigger type: Configuration changes

Parameters:

kmsId

ID or ARN of the KMS key that is used to encrypt the volume.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

fms-webacl-resource-policy-check

Checks whether the web ACL is associated with an Application Load Balancer or Amazon CloudFront distributions. When AWS Firewall Manager creates this rule, the FMS policy owner specifies the `WebACLId` in the FMS policy and can optionally enable remediation.

Identifier: FMS_WEBACL_RESOURCE_POLICY_CHECK

Trigger type: Configuration changes

Parameters:

webACLId

The WebACLId of the web ACL.

resourceTags

The resource tags (Application Load Balancer and Amazon CloudFront distributions) that the rule should be associated with (for example, { "tagKey1" : ["tagValue1"], "tagKey2" : ["tagValue2", "tagValue3"] }").

excludeResourceTags

If true, exclude the resources that match the resourceTags.

fmsManagedToken

A token generated by AWS Firewall Manager when creating the rule in your account. AWS Config ignores this parameter when you create this rule.

fmsRemediationEnabled

If true, AWS Firewall Manager will update NON_COMPLIANT resources according to FMS policy. AWS Config ignores this parameter when you create this rule.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

fms-webacl-rulegroup-association-check

Checks that the rule groups associate with the web ACL at the correct priority. The correct priority is decided by the rank of the rule groups in the ruleGroups parameter. When AWS Firewall Manager creates this rule, it assigns the highest priority 0 followed by 1, 2, and so on. The FMS policy owner specifies the ruleGroups rank in the FMS policy and can optionally enable remediation.

Identifier: FMS_WEBACL_RULEGROUP_ASSOCIATION_CHECK

Trigger type: Configuration changes

Parameters:

ruleGroups

Comma-separated list of `RuleGroupIds` and `WafOverrideAction` pairs (for example, RuleGroupId-1:NONE, RuleGroupId-2:COUNT). For this example, RuleGroupId-1 receives the highest priority 0 and RuleGroupId-2 receives priority 1.

fmsManagedToken

A token generated by AWS Firewall Manager when creating the rule in your account. AWS Config ignores this parameter when you create this rule.

fmsRemediationEnabled

If true, AWS Firewall Manager will update NON_COMPLIANT resources according to FMS policy. AWS Config ignores this parameter when you create this rule.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

guardduty-enabled-centralized

Checks whether Amazon GuardDuty is enabled in your AWS account and region. If you provide an AWS account for centralization, the rule evaluates the Amazon GuardDuty results in the centralized account. The rule is COMPLIANT when Amazon GuardDuty is enabled.

Identifier: GUARDDUTY_ENABLED_CENTRALIZED

Trigger type: Configuration changes

Parameters:

CentralMonitoringAccount (optional)

> Specify 12-digit AWS Account for centralization of Amazon GuardDuty results.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

iam-group-has-users-check

Checks whether IAM groups have at least one IAM user.

Identifier: IAM_GROUP_HAS_USERS_CHECK

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

iam-password-policy

Checks whether the account password policy for IAM users meets the specified requirements.

Identifier: IAM_PASSWORD_POLICY

Trigger type: Periodic

Parameters:

RequireUppercaseCharacters

Require at least one uppercase character in password.

RequireLowercaseCharacters

Require at least one lowercase character in password.

RequireSymbols

Require at least one symbol in password.

RequireNumbers

Require at least one number in password.

MinimumPasswordLength

Password minimum length.

PasswordReusePrevention

Number of passwords before allowing reuse.

MaxPasswordAge

Number of days before password expiration.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

iam-policy-blacklisted-check

Checks whether for each IAM resource, a policy ARN in the input parameter is attached to the IAM resource. The rule is NON_COMPLIANT if the policy ARN is attached to the IAM resource. AWS Config marks the resource as COMPLIANT if the IAM resource is part of the `exceptionList` parameter irrespective of the presence of the policy ARN.

Identifier: IAM_POLICY_BLACKLISTED_CHECK

Trigger type: Configuration changes

Parameters:

policyArns

Comma-separated list of policy ARNs.

exceptionList

Comma-separated list IAM users, groups, or roles that are exempt from this rule. For example, users:[user1;user2], groups:[group1;group2], roles:[role1;role2;role3].

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

iam-policy-no-statements-with-admin-access

Checks whether the default version of AWS Identity and Access Management (IAM) policies do not have administrator access. If any statement has "Effect": "Allow" with "Action": "*" over "Resource": "*", the rule is NON_COMPLIANT.

Identifier: IAM_POLICY_NO_STATEMENTS_WITH_ADMIN_ACCESS

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

iam-role-managed-policy-check

Checks that the AWS Identity and Access Management (IAM) role is attached to all AWS managed policies specified in the list of managed policies. The rule is NON_COMPLIANT if the IAM role is not attached to the IAM managed policy.

Identifier: IAM_ROLE_MANAGED_POLICY_CHECK

Trigger type: Configuration changes

Parameters:

managedPolicyNames

Comma-separated list of AWS managed policy ARNs.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

iam-root-access-key-check

Checks whether the root user access key is available. The rule is COMPLIANT if the user access key does not exist.

Identifier: IAM_ROOT_ACCESS_KEY_CHECK

Trigger type: Periodic

Parameters:

managedPolicyNames

Comma-separated list of AWS managed policy ARNs.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

iam-user-group-membership-check

Checks whether IAM users are members of at least one IAM group.

Identifier: IAM_USER_GROUP_MEMBERSHIP_CHECK

Trigger type: Configuration changes

Parameters:

groupName

Comma-separated list of IAM groups in which IAM users must be members.

> **Note**
> This rule does not support group names with commas.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

iam-user-no-policies-check

Checks that none of your IAM users have policies attached. IAM users must inherit permissions from IAM groups or roles.

Identifier: IAM_USER_NO_POLICIES_CHECK

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

iam-user-unused-credentials-check

Checks whether your AWS Identity and Access Management (IAM) users have passwords or active access keys that have not been used within the specified number of days you provided. Re-evaluating this rule within 4 hours of the first evaluation will have no effect on the results.

Identifier: IAM_USER_UNUSED_CREDENTIALS_CHECK

Trigger type: Periodic

Parameters:

maxCredentialUsageAge

Maximum number of days within which a credential must be used. The default value is 90 days.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

lambda-function-settings-check

Checks that the lambda function settings for runtime, role, timeout, and memory size match the expected values.

Identifier: LAMBDA_FUNCTION_SETTINGS_CHECK

Trigger type: Configuration changes

Parameters:

runtime

Comma-separated list of runtime values.

role

IAM role.

timeout

Timeout in seconds.

memory_size

Memory size in MB.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

lambda-function-public-access-prohibited

Checks whether the AWS Lambda function policy attached to the Lambda resource prohibits public access. If the Lambda function policy allows public access it is NON_COMPLIANT.

Identifier: LAMBDA_FUNCTION_PUBLIC_ACCESS_PROHIBITED

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

mfa-enabled-for-iam-console-access

Checks whether AWS Multi-Factor Authentication (MFA) is enabled for all AWS Identity and Access Management (IAM) users that use a console password. The rule is COMPLIANT if MFA is enabled.

Identifier: MFA_ENABLED_FOR_IAM_CONSOLE_ACCESS

Trigger type: Periodic

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

multi-region-cloud-trail-enabled

Checks that there is at least one multi-region AWS CloudTrail. The rule is NON_COMPLIANT if the trails do not match inputs parameters.

Identifier: MULTI_REGION_CLOUD_TRAIL_ENABLED

Trigger type: Periodic

Parameters (optional):

s3BucketName

Name of Amazon S3 bucket for AWS CloudTrail to deliver log files to.

snsTopicArn

Amazon SNS topic ARN for AWS CloudTrail to use for notifications.

cloudWatchLogsLogGroupArn

Amazon CloudWatch log group ARN for AWS CloudTrail to send data to.

includeManagementEvents

Event selector to include management events for the AWS CloudTrail.

readWriteType

Type of events to record. Valid values are `ReadOnly`, `WriteOnly` and `ALL`.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

rds-instance-public-access-check

Check whether the Amazon Relational Database Service instances are not publicaly accessible. The rule is NON_COMPLIANT if the `publiclyAccessible` field is true in the instance configuration item.

Identifier: RDS_INSTANCE_PUBLIC_ACCESS_CHECK

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

rds-multi-az-support

Checks whether high availability is enabled for your RDS DB instances.

In a Multi-AZ deployment, Amazon RDS automatically provisions and maintains a synchronous standby replica in a different Availability Zone. For more information, see High Availability (Multi-AZ) in the *Amazon RDS User Guide*.

> **Note**
> This rule does not evaluate Amazon Aurora databases.

Identifier: RDS_MULTI_AZ_SUPPORT

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

rds-snapshots-public-prohibited

Checks if Amazon Relational Database Service (Amazon RDS) snapshots are public. The rule is NON_COMPLIANT if any existing and new Amazon RDS snapshots are public.

Identifier: RDS_SNAPSHOTS_PUBLIC_PROHIBITED

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

rds-storage-encrypted

Checks whether storage encryption is enabled for your RDS DB instances.

Identifier: RDS_STORAGE_ENCRYPTED

Trigger type: Configuration changes

Parameters:

kmsKeyId

KMS key ID or ARN used to encrypt the storage.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

redshift-cluster-configuration-check

Checks whether Amazon Redshift clusters have the specified settings.

Identifier: REDSHIFT_CLUSTER_CONFIGURATION_CHECK

Trigger type: Configuration changes

Parameters:

clusterDbEncrypted

Database encryption is enabled.

nodeTypes

Specify node type.

loggingEnabled

Audit logging is enabled.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

redshift-cluster-maintenancesettings-check

Checks whether Amazon Redshift clusters have the specified maintenance settings.

Identifier: REDSHIFT_CLUSTER_MAINTENANCESETTINGS_CHECK

Trigger type: Configuration changes

Parameters:

allowVersionUpgrade

Allow version upgrade is enabled.

preferredMaintenanceWindow

Scheduled maintenance window for clusters (for example, Mon:09:30-Mon:10:00).

automatedSnapshotRetentionPeriod

Number of days to retain automated snapshots.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

required-tags

Checks whether your resources have the tags that you specify. For example, you can check whether your EC2 instances have the 'CostCenter' tag. Separate multiple values with commas.

> **Important**
> The supported resource types for this rule are as follows:
>
> - ACM::Certificate
> - AutoScaling::AutoScalingGroup
> - CloudFormation::Stack
> - CodeBuild::Project
> - DynamoDB::Table
> - EC2::CustomerGateway
> - EC2::Instance
> - EC2::InternetGateway
> - EC2::NetworkAcl
> - EC2::NetworkInterface
> - EC2::RouteTable
> - EC2::SecurityGroup
> - EC2::Subnet
> - EC2::Volume
> - EC2::VPC
> - EC2::VPNConnection
> - EC2::VPNGateway
> - ElasticLoadBalancing::LoadBalancer
> - ElasticLoadBalancingV2::LoadBalancer
> - RDS::DBInstance
> - RDS::DBSecurityGroup
> - RDS::DBSnapshot
> - RDS::DBSubnetGroup
> - RDS::EventSubscription
> - Redshift::Cluster
> - Redshift::ClusterParameterGroup
> - Redshift::ClusterSecurityGroup
> - Redshift::ClusterSnapshot
> - Redshift::ClusterSubnetGroup
> - S3::Bucket

Identifier: REQUIRED_TAGS

Trigger type: Configuration changes

Parameters:

tag1Key

Key of the required tag.

tag1Value

Optional value of the required tag. Separate multiple values with commas.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

restricted-common-ports

Checks whether the incoming SSH traffic for the security groups is accessible to the specified ports. The rule is COMPLIANT when the IP addresses of the incoming SSH traffic in the security group are restricted to the specified ports. This rule applies only to IPv4.

Identifier: RESTRICTED_INCOMING_TRAFFIC

Trigger type: Configuration changes

Parameters:

blockedPort1

Blocked TCP port number.

blockedPort2

Blocked TCP port number.

blockedPort3

Blocked TCP port number.

blockedPort4

Blocked TCP port number.

blockedPort5

Blocked TCP port number.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

restricted-ssh

Checks whether the incoming SSH traffic for the security groups is accessible. The rule is COMPLIANT when the IP addresses of the incoming SSH traffic in the security groups are restricted. This rule applies only to IPv4.

Identifier: INCOMING_SSH_DISABLED

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

root-account-hardware-mfa-enabled

Checks whether your AWS account is enabled to use multi-factor authentication (MFA) hardware device to sign in with root credentials. The rule is NON_COMPLIANT if any virtual MFA devices are permitted for signing in with root credentials.

Identifier: ROOT_ACCOUNT_HARDWARE_MFA_ENABLED

Trigger type: Periodic

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

root-account-mfa-enabled

Checks whether users of your AWS account require a multi-factor authentication (MFA) device to sign in with root credentials.

Identifier: ROOT_ACCOUNT_MFA_ENABLED

Trigger type: Periodic

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

s3-blacklisted-actions-prohibited

Checks that the Amazon Simple Storage Service bucket policy does not allow blacklisted bucket-level and object-level actions on resources in the bucket for principals from other AWS accounts. For example, the rule checks that the Amazon S3 bucket policy does not allow another AWS account to perform any s3:GetBucket* actions and s3:DeleteObject on any object in the bucket. The rule is NON_COMPLIANT if any blacklisted actions are allowed by the Amazon S3 bucket policy.

Identifier: S3_BLACKLISTED_ACTIONS_PROHIBITED

Trigger type: Configuration changes

Parameters:

blacklistedactionpatterns

> Comma-separated list of blacklisted action patterns, for example, s3:GetBucket* and s3:DeleteObject.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

s3-bucket-policy-not-more-permissive

Verifies that your Amazon Simple Storage Service bucket policies do not allow other inter-account permissions than the control Amazon S3 bucket policy that you provide.

Note
If you provide an invalid parameter value, you will see the following error: Value for controlPolicy parameter must be an Amazon S3 bucket policy.

Identifier: S3_BUCKET_POLICY_NOT_MORE_PERMISSIVE

Trigger type: Configuration changes

Parameters:

controlPolicy

Amazon S3 bucket policy that defines an upper bound on the permissions of your S3 buckets. The policy can be a maximum of 1024 characters long.

An example of a control policy is as follows.

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Principal": {
        "AWS": "11112222333"
      },
      "Effect": "Allow",
      "Action": "s3:GetObject",
      "Resource": "*"
    },
    {
      "Principal": {
        "AWS": "44445556666"
      },
      "Effect": "Allow",
      "Action": "s3:*",
      "Resource": "*"
    }
  ]
}
```

The first Allow statement specifies that the AWS account ID `111122223333` can retrieve objects (`s3:GetObject`) on any resource (*). The second Allow statement specifies that the AWS account ID `44445556666` can perform any s3 action `(s3:*)` on any resource (*).

Examples of **NON_COMPLIANT** bucket policies with the above control policy as an input parameter for the rule are as follows.

The following bucket policy is NON_COMPLIANT because the bucket policy allows permissions for the IAM user, Alice, in the AWS account ID `888899998888`. These permissions are implicitly denied by the control policy.

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Principal": {
        "AWS": [
          "arn:aws:iam::888899998888:user/Alice"
        ]
      },
      "Effect": "Allow",
      "Action": "s3:GetObject",
      "Resource": "arn:aws:s3:::example-bucket/*"
    }
  ]
}
```

The following bucket policy is NON_COMPLIANT because the bucket policy allows the AWS account ID `11112222333` permissions to perform `s3:PutBucketPolicy` that is implicitly denied by the control policy.

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Principal": {
        "AWS": [
          "11112222333"
        ]
      },
      "Effect": "Allow",
      "Action": "s3:PutBucketPolicy",
      "Resource": "arn:aws:s3:::example-bucket"
    }
  ]
}
```

Examples of **COMPLIANT** bucket policies are as follows.

The following bucket policy is COMPLIANT because the control policy allows principals from the AWS account ID `11112222333` to perform `s3:GetObject` on any object.

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Principal": {
        "AWS" : [
          "arn:aws:iam::11112222333:user/Bob"
        ]
      },
      "Effect": "Allow",
      "Action": "s3:GetObject",
      "Resource": "arn:aws:s3:::example-bucket/photos/*"
    }
  ]
}
```

The following bucket policy is COMPLIANT because the control policy allows a principal with the AWS account ID `444455556666` to perform any S3 action.

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Principal": {
        "AWS": [
          "44445556666"
        ]
      },
      "Effect": "Allow",
      "Action": "s3:*Configuration",
      "Resource": "arn:aws:s3:::example-bucket"
    }
  ]
}
```

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

s3-bucket-logging-enabled

Checks whether logging is enabled for your S3 buckets.

Identifier: S3_BUCKET_LOGGING_ENABLED

Trigger type: Configuration changes

Parameters:

targetBucket

Target S3 bucket for storing server access logs.

targetPrefix

Prefix of the target S3 bucket for storing server access logs.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

s3-bucket-public-read-prohibited

Checks that your Amazon S3 buckets do not allow public read access. If an Amazon S3 bucket policy or bucket ACL allows public read access, the bucket is NON_COMPLIANT.

Identifier: S3_BUCKET_PUBLIC_READ_PROHIBITED

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

s3-bucket-public-write-prohibited

Checks that your Amazon S3 buckets do not allow public write access. If an Amazon S3 bucket policy or bucket ACL allows public write access, the bucket is NON_COMPLIANT.

Identifier: S3_BUCKET_PUBLIC_WRITE_PROHIBITED

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

s3-bucket-replication-enabled

Checks whether S3 buckets have cross-region replication enabled.

Identifier: S3_BUCKET_REPLICATION_ENABLED

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

s3-bucket-server-side-encryption-enabled

Checks whether the Amazon S3 bucket policy denies the `S3:PutObject` requests that are not encrypted using AES-256 or AWS Key Management Service.

Identifier: S3_BUCKET_SERVER_SIDE_ENCRYPTION_ENABLED

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

s3-bucket-ssl-requests-only

Checks whether S3 buckets have policies that require requests to use Secure Socket Layer (SSL).

Identifier:S3_BUCKET_SSL_REQUESTS_ONLY

Trigger type: Configuration changes

Parameters:

None

An example of a bucket policy that is **COMPLIANT** with the SSL AWS Config rule is as follows:

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Principal": {
        "AWS": [
          "123412341234"
        ]
      },
      "Action": "s3:Get*",
      "Resource": "arn:aws:s3:::example-bucket/*"
    },
    {
      "Effect": "Deny",
      "Principal": "*",
      "Action": "*",
      "Resource": "arn:aws:s3:::example-bucket/*",
      "Condition": {
        "Bool": {
          "aws:SecureTransport": "false"
        }
      }
    }
  ]
}
```

An example of a bucket policy that is **NON_COMPLIANT** with the SSL AWS Config rule is as follows:

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Principal": {
        "AWS": [
          "123412341234"
        ]
      },
      "Action": "s3:Get*",
      "Resource": "arn:aws:s3:::example-bucket/*"
    },
    {
      "Effect": "Deny",
      "Principal": "*",
      "Action": "*",
      "Resource": "arn:aws:s3:::example-bucket/private/*",
      "Condition": {
        "Bool": {
          "aws:SecureTransport": "false"
        }
      }
    }
  ]
}
```

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

s3-bucket-versioning-enabled

Checks whether versioning is enabled for your S3 buckets. Optionally, the rule checks if MFA delete is enabled for your S3 buckets.

Identifier: S3_BUCKET_VERSIONING_ENABLED

Trigger type: Configuration changes

Parameters:

isMfaDeleteEnabled

MFA delete is enabled for your S3 buckets.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

vpc-default-security-group-closed

Checks that the default security group of any Amazon Virtual Private Cloud (VPC) does not allow inbound or outbound traffic. The rule returns NOT_APPLICABLE if the security group is not default. The rule is NON_COMPLIANT if the default security group has one or more inbound or outbound traffic.

Identifier: VPC_DEFAULT_SECURITY_GROUP_CLOSED

Trigger type: Configuration changes

Parameters:

None

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

vpc-flow-logs-enabled

Checks whether Amazon Virtual Private Cloud flow logs are found and enabled for Amazon VPC.

Identifier: VPC_FLOW_LOGS_ENABLED

Trigger type: Periodic

Parameters:

trafficType

> The valid trafficType values are `ACCEPT`, `REJECT`, or `ALL`.

AWS CloudFormation template

To create AWS Config managed rules with AWS CloudFormation templates, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).

View	Launch
View	Launch Stack

Working with AWS Config Managed Rules

You can set up and activate AWS managed rules from the AWS Management Console, AWS CLI, or AWS Config API.

Setting Up and Activating an AWS Managed Rule (Console)

1. Sign in to the AWS Management Console and open the AWS Config console at https://console.aws.amazon.com/config/.
2. In the AWS Management Console menu, verify that the region selector is set to a region that supports AWS Config rules. For the list of supported regions, see AWS Config Regions and Endpoints in the *Amazon Web Services General Reference*.
3. In the left navigation, choose **Rules**.
4. On the **Rules** page, choose **Add rule**.
5. On the **Rules** page, you can do the following:
    - Type in the search field to filter results by rule name, description, and label. For example, type **EC2** to return rules that evaluate EC2 resource types or type **periodic** to return rules that are triggered periodically.
    - Choose the arrow icon to see the next page of rules. Recently added rules are marked as **New**.
6. Choose a rule that you want to create.
7. On the **Configure rule** page, configure the rule by completing the following steps:
    a. For **Name**, type a unique name for the rule.
    b. If the trigger types for your rule include **Configuration changes**, specify one of the following options for **Scope of changes** with which AWS Config invokes your Lambda function:
        - **Resources** – When a resource that matches the specified resource type, or the type plus identifier, is created, changed, or deleted.
        - **Tags** – When a resource with the specified tag is created, changed, or deleted.
        - **All changes** – When a resource recorded by AWS Config is created, changed, or deleted.

    c. If the trigger types for your rule include **Periodic**, specify the **Frequency** with which AWS Config invokes your Lambda function.
    d. If your rule includes parameters in the **Rule parameters** section, you can customize the values for the provided keys. A parameter is an attribute that your resources must have before they are considered COMPLIANT with the rule.
8. Choose **Save**. Your new rule displays on the **Rules** page.

    Compliance will display **Evaluating...** until AWS Config has evaluation results for your rule. A summary of the results appears after several minutes. You can update the results with the refresh button.

    If the rule or function is not working as expected, you might see one of the following for **Compliance**:

    - **No results reported** - AWS Config evaluated your resources against the rule. The rule did not apply to the AWS resources in its scope, the specified resources were deleted, or the evaluation results were deleted. To get evaluation results, update the rule, change its scope, or choose **Re-evaluate**.

This message may also appear if the rule didn't report evaluation results.

- **No resources in scope** - AWS Config cannot evaluate your recorded AWS resources against this rule because none of your resources are within the rule’s scope. To get evaluation results, edit the rule and change its scope, or add resources for AWS Config to record by using the **Settings** page.
- **Evaluations failed** - For information that can help you determine the problem, choose the rule name to open its details page and see the error message.

Activating an AWS Managed Rule (AWS CLI)

Use the `put-config-rule` command.

Activating an AWS Managed Rule (API)

Use the PutConfigRule action.

Creating AWS Config Managed Rules With AWS CloudFormation Templates

For supported AWS Config managed rules, you can use the AWS CloudFormation templates to create the rule for your account or update an existing AWS CloudFormation stack. A stack is a collection of related resources that you provision and update as a single unit. When you launch a stack with a template, the AWS Config managed rule is created for you. The templates create only the rule, and don't create additional AWS resources.

> **Note**
> When AWS Config managed rules are updated, the templates are updated for the latest changes. To save a specific version of a template for a rule, download the template, and upload it to your S3 bucket.

For more information about working with AWS CloudFormation templates, see Getting Started with AWS CloudFormation in the *AWS CloudFormation User Guide*.

To launch an AWS CloudFormation stack for an AWS Config managed rule

1. Choose a rule from the list of List of AWS Config Managed Rules (p. 98).
2. Choose **View** to download a template or choose **Launch Stack**. If you choose **Launch Stack**, skip to step 4.
3. Go to the CloudFormation console and create a new stack.
4. For **Select Template**:
   - If you downloaded the template, choose **Upload a template to Amazon S3**, and then choose **Browse** to upload the template.
   - If you chose the **Launch Stack** button, the template URL appears automatically in the **Specify an Amazon S3 template URL** field.
5. Choose **Next**.
6. For **Specify Details**, type a stack name and enter parameter values for the AWS Config rule. For example, if you are using the `DESIRED_INSTANCE_TYPE` managed rule template, you can specify the instance type such as "m4.large".
7. Choose **Next**.

8. For **Options**, you can create tags or configure other advanced options. These are not required.
9. Choose **Next**.
10. For **Review**, verify that the template, parameters, and other options are correct.
11. Choose **Create**. The stack is created in a few minutes. You can view the created rule in the AWS Config console.

You can use the templates to create a single stack for AWS Config managed rules or update an existing stack in your account. If you delete a stack, the managed rules created from that stack are also deleted. For more information, see Working with Stacks in the *AWS CloudFormation User Guide*.

AWS Config Custom Rules

You can develop custom rules and add them to AWS Config. You associate each custom rule with an AWS Lambda function, which contains the logic that evaluates whether your AWS resources comply with the rule.

You associate this function with your rule, and the rule invokes the function either in response to configuration changes or periodically. The function then evaluates whether your resources comply with your rule, and sends its evaluation results to AWS Config.

The exercise in Getting Started with Custom Rules for AWS Config (p. 146) guides you through creating a custom rule for the first time. It includes an example function that you can add to AWS Lambda with no modification.

To learn how AWS Lambda functions work and how to develop them, see the *AWS Lambda Developer Guide*.

Topics

Getting Started with Custom Rules for AWS Config

This procedure guides you through the process of creating a custom rule that evaluates whether each of your EC2 instances is the t2.micro type. AWS Config will run event-based evaluations for this rule, meaning it will check your instance configurations each time AWS Config detects a configuration change in an instance. AWS Config will flag t2.micro instances as compliant and all other instances as noncompliant. The compliance status will appear in the AWS Config console.

To have the best outcome with this procedure, your should have one or more EC2 instances in your AWS account. Your instances should include a combination of at least one t2.micro instance and other types.

To create this rule, first, you will create an AWS Lambda function by customizing a blueprint in the AWS Lambda console. Then, you will create a custom rule in AWS Config, and you will associate the rule with the function.

Topics

Creating an AWS Lambda Function for a Custom Config Rule

1. Sign in to the AWS Management Console and open the AWS Lambda console at https://console.aws.amazon.com/lambda/.
2. In the AWS Management Console menu, verify that the region selector is set to a region that supports AWS Config rules. For the list of supported regions, see AWS Config Regions and Endpoints in the *Amazon Web Services General Reference*.
3. In the AWS Lambda console, choose **Create a Lambda function**.
4. On the **Select blueprint** page, for **filter**, type **config-rule-change-triggered**. Select the blueprint in the filter results.
5. On the **Configure triggers** page, choose **Next**.
6. On the **Configure function** page, complete the following steps:

   a. For **Name**, type **`InstanceTypeCheck`**.

   b. For **Runtime**, keep **Node.js**.

   c. For **Code entry type**, keep **Edit code inline**. The Node.js code for your function is provided in the code editor. For this procedure, you do not need to change the code.

   d. For **Handler**, keep **`index.handler`**.

   e. For **Role**, choose **Create new role from template(s)**.

   f. For **Role name**, type a name.

   g. For **Policy templates**, choose **AWS Config Rules permission**.

   h. On the **Configure function** page, choose **Next**.

   i. On the **Review page**, verify the details about your function, and choose **Create function**. The AWS Lambda console displays your function.
7. To verify that your function is set up correctly, test it with the following steps:

   a. Choose **Actions**, and then choose **Configure test event**.

   b. In the **Input test event** window, for **Sample event template**, choose **AWS Config Change Triggered Rule**.

   c. Choose **Save and test**. AWS Lambda tests your function with the example event. If your function is working as expected, an error message similar to the following appears under **Execution result**:

```
{
  "errorMessage": "Result Token provided is invalid",
  "errorType": "InvalidResultTokenException",
. . .
```

   The `InvalidResultTokenException` is expected because your function runs successfully only when it receives a *result token* from AWS Config. The result token identifies the AWS Config rule and the event that caused the evaluation, and the result token associates an evaluation with a rule. This exception indicates that your function has the permission it needs to send results to AWS Config. Otherwise, the following error message appears: `not authorized to perform: config:PutEvaluations`. If this error occurs, update the role that you assigned to your function to allow the `config:PutEvaluations` action, and test your function again.

Creating a Custom Rule

1. Open the AWS Config console at https://console.aws.amazon.com/config/.
2. In the AWS Management Console menu, verify that the region selector is set to the same region in which you created the AWS Lambda function for your custom rule.

3. On the **Rules** page, choose **Add rule**.
4. On the **Add rule** page, choose **Add custom rule**.
5. On the **Configure rule** page, complete the following steps:

   a. For **Name**, type **`InstanceTypesAreT2micro`**.
   b. For **Description**, type **`Evaluates whether EC2 instances are the t2.micro type`**.
   c. For **AWS Lambda function ARN**, specify the ARN that AWS Lambda assigned to your function.

      Note
      The ARN that you specify in this step must not include the `$LATEST` qualifier. You can specify an ARN without a version qualifier or with any qualifier besides `$LATEST`. AWS Lambda supports function versioning, and each version is assigned an ARN with a qualifier. AWS Lambda uses the `$LATEST` qualifier for the latest version.
   d. For **Trigger type**, choose **Configuration changes**.
   e. For **Scope of changes**, choose **Resources**.
   f. For **Resources**, choose **Instance**.
   g. In the **Rule parameters** section, you must specify the rule parameter that your AWS Lambda function evaluates and the desired value. The function for this procedure evaluates the `desiredInstanceType` parameter.

      For **Key**, type **`desiredInstanceType`**. For **Value**, type **`t2.micro`**.
6. Choose **Save**. Your new rule displays on the **Rules** page.

   Compliance will display **Evaluating...** until AWS Config receives evaluation results from your AWS Lambda function. If the rule and the function are working as expected, a summary of the results appears after several minutes. For example, a result of **2 noncompliant resource(s)** indicates that 2 of your instances are not t2.micro instances, and a result of **Compliant** indicates that all instances are t2.micro. You can update the results with the refresh button.

   If the rule or function is not working as expected, you might see one of the following for **Compliance**:

   - **No results reported** - AWS Config evaluated your resources against the rule. The rule did not apply to the AWS resources in its scope, the specified resources were deleted, or the evaluation results were deleted. To get evaluation results, update the rule, change its scope, or choose **Re-evaluate**.

     Verify that the scope includes **Instance** for **Resources**, and try again.
   - **No resources in scope** - AWS Config cannot evaluate your recorded AWS resources against this rule because none of your resources are within the rule's scope. To get evaluation results, edit the rule and change its scope, or add resources for AWS Config to record by using the **Settings** page.

     Verify that AWS Config is recording EC2 instances.
   - **Evaluations failed** - For information that can help you determine the problem, choose the rule name to open its details page and see the error message.

If your rule works correctly and AWS Config provides evaluation results, you can learn which conditions affect the compliance status of your rule. You can learn which resources, if any, are noncompliant, and why. For more information, see Viewing Configuration Compliance (p. 93).

Developing a Custom Rule for AWS Config

Complete the following procedure to create a custom rule. To create a custom rule, you first create an AWS Lambda function, which contains the evaluation logic for the rule. Then you associate the function with a custom rule that you create in AWS Config.

Contents

Creating an AWS Lambda Function for a Custom Config Rule

A *Lambda function* is custom code that you upload to AWS Lambda, and it is invoked by events that are published to it by an event source. If the Lambda function is associated with a Config rule, AWS Config invokes it when the rule's trigger occurs. The Lambda function then evaluates the configuration information that is sent by AWS Config, and it returns the evaluation results. For more information about Lambda functions, see Function and Event Sources in the *AWS Lambda Developer Guide*.

You can use a programming language that is supported by AWS Lambda to create a Lambda function for a custom rule. To make this task easier, you can customize an AWS Lambda blueprint or reuse a sample function from the AWS Config Rules GitHub repository.

AWS Lambda blueprints

The AWS Lambda console provides sample functions, or *blueprints*, which you can customize by adding your own evaluation logic. When you create a function, you can choose one of the following blueprints:

- **config-rule-change-triggered** – Triggered when your AWS resource configurations change.
- **config-rule-periodic** – Triggered at a frequency that you choose (for example, every 24 hours).

AWS Config Rules GitHub repository

A public repository of sample functions for custom rules is available on GitHub, a web-based code hosting and sharing service. The sample functions are developed and contributed by the AWS community. If you want to use a sample, you can copy its code into a new AWS Lambda function. To view the repository, see https://github.com/awslabs/aws-config-rules/.

To create the function for your custom rule

1. Sign in to the AWS Management Console and open the AWS Lambda console at https://console.aws.amazon.com/lambda/.
2. In the AWS Management Console menu, verify that the region selector is set to a region that supports AWS Config rules. For the list of supported regions, see AWS Config Regions and Endpoints in the *Amazon Web Services General Reference*.
3. Choose **Create a Lambda function**.
4. On the **Select blueprint** page, you can choose one of the blueprint functions for AWS Config rules as a starting point, or you can proceed without a blueprint by choosing **Skip**.
5. On the **Configure triggers** page, choose **Next**.
6. On the **Configure function** page, type a name and description.
7. For **Runtime**, choose the programming language in which your function is written.
8. For **Code entry type**, choose your preferred entry type. If you are using a blueprint, keep **Edit code inline**.
9. Provide your code using the method required by the code entry type that you selected. If you are using a blueprint, the function code is provided in the code editor, and you can customize it to include your own evaluation logic. Your code can evaluate the event data that AWS Config provides when it invokes your function:

- For functions based on the **config-rule-change-triggered** blueprint, or for functions triggered by configuration changes, the event data is the configuration item or an oversized configuration item object for the AWS resource that changed.
- For functions based on the **config-rule-periodic** blueprint, or for functions triggered at a frequency that you choose, the event data is a JSON object that includes information about when the evaluation was triggered.
- For both types of functions, AWS Config passes rule parameters in JSON format. You can define which rule parameters are passed when you create the custom rule in AWS Config.
- For example events that AWS Config publishes when it invokes your function, see Example Events for AWS Config Rules (p. 157).

10. For **Handler**, specify the handler for your function. If you are using a blueprint, keep the default value.
11. For **Role**, choose **Create new role from template(s)**.
12. For **Role name**, type a name.
13. For **Policy templates**, choose **AWS Config Rules permission**.
14. On the **Configure function** page, choose **Next**.
15. On the **Review page**, verify the details about your function, and choose **Create function**.

Creating a Custom Rule in AWS Config

Use AWS Config to create a custom rule and associate the rule with a Lambda function.

To create a custom rule

1. Open the AWS Config console at https://console.aws.amazon.com/config/.
2. In the AWS Management Console menu, verify that the region selector is set to the same region in which you created the AWS Lambda function for your custom rule.
3. On the **Rules** page, choose **Add rule**.
4. On the **Add rule** page, choose **Add custom rule**.
5. On the **Configure rule** page, type a name and description.
6. For **AWS Lambda function ARN**, specify the ARN that AWS Lambda assigned to your function.

   Note
   The ARN that you specify in this step must not include the `$LATEST` qualifier. You can specify an ARN without a version qualifier or with any qualifier besides `$LATEST`. AWS Lambda supports function versioning, and each version is assigned an ARN with a qualifier. AWS Lambda uses the `$LATEST` qualifier for the latest version.
7. For **Trigger type**, choose one or both of the following:
   - **Configuration changes** – AWS Config invokes your Lambda function when it detects a configuration change.
   - **Periodic** – AWS Config invokes your Lambda function at the frequency that you choose (for example, every 24 hours).
8. If the trigger types for your rule include **Configuration changes**, specify one of the following options for **Scope of changes** with which AWS Config invokes your Lambda function:
   - **Resources** – When a resource that matches the specified resource type, or the type plus identifier, is created, changed, or deleted.
   - **Tags** – When a resource with the specified tag is created, changed, or deleted.
   - **All changes** – When a resource recorded by AWS Config is created, changed, or deleted.

9. If the trigger types for your rule include **Periodic**, specify the **Frequency** with which AWS Config invokes your Lambda function.
10. In the **Rule parameters** section, specify any rule parameters that your AWS Lambda function evaluates and the desired value.
11. Choose **Save**. Your new rule displays on the **Rules** page.

    Compliance will display **Evaluating...** until AWS Config receives evaluation results from your AWS Lambda function. If the rule and the function are working as expected, a summary of results appears after several minutes. You can update the results with the refresh button.

    If the rule or function is not working as expected, you might see one of the following for **Compliance**:

    - **No results reported** - AWS Config evaluated your resources against the rule. The rule did not apply to the AWS resources in its scope, the specified resources were deleted, or the evaluation results were deleted. To get evaluation results, update the rule, change its scope, or choose **Re-evaluate**.

      This message may also appear if the rule didn't report evaluation results.
    - **No resources in scope** - AWS Config cannot evaluate your recorded AWS resources against this rule because none of your resources are within the rule's scope. You can choose which resources AWS Config records on the **Settings** page.
    - **Evaluations failed** - For information that can help you determine the problem, choose the rule name to open its details page and see the error message.

Note

When you create a custom rule with the AWS Config console, the appropriate permissions are automatically created for you. If you create a custom rule with the AWS CLI, you need to give AWS Config permission to invoke your Lambda function, using the `aws lambda add-permission` command. For more information, see Using Resource-Based Policies for AWS Lambda (Lambda Function Policies) in the *AWS Lambda Developer Guide*.

Evaluating Additional Resource Types

You can create custom rules to run evaluations for resource types not yet recorded by AWS Config. This is useful if you want to evaluate compliance for additional resource types, such as Amazon Glacier vaults or Amazon SNS topics, that AWS Config doesn't currently record. For a list of additional resource types that you can evaluate with custom rules, see AWS Resource Types Reference.

Note

The list in the AWS CloudFormation User Guide may contain recently added resource types that are not yet available for creating custom rules in AWS Config. AWS Config adds resource types support at regular intervals.

Example

1. You want to evaluate Amazon Glacier vaults in your account. Amazon Glacier vault resources are currently not recorded by AWS Config.
2. You create an AWS Lambda function that evaluates whether your Amazon Glacier vaults comply with your account requirements.
3. You create a custom rule named **evaluate-glacier-vaults** and then assign your AWS Lambda function to the rule.
4. AWS Config invokes your Lambda function and then evaluates the Amazon Glacier vaults against your rule.
5. AWS Config returns the evaluations and you can view the compliance results for your rule.

> **Note**
> You can view the configuration details in the AWS Config timeline and look up resources in the AWS Config console for resources that AWS Config supports. If you configured AWS Config to record all resource types, newly supported resources will automatically be recorded. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9).

Example AWS Lambda Functions and Events for AWS Config Rules

Each custom Config rule is associated with an AWS Lambda *function*, which is custom code that contains the evaluation logic for the rule. When the trigger for a Config rule occurs (for example, when AWS Config detects a configuration change), AWS Config invokes the rule's Lambda function by publishing an *event*, which is a JSON object that provides the configuration data that the function evaluates.

For more information about functions and events in AWS Lambda, see Function and Event Sources in the *AWS Lambda Developer Guide*.

Topics

Example AWS Lambda Functions for AWS Config Rules (Node.js)

AWS Lambda executes functions in response to events that are published by AWS services. The function for a custom Config rule receives an event that is published by AWS Config, and the function then uses data that it receives from the event and that it retrieves from the AWS Config API to evaluate the compliance of the rule. The operations in a function for a Config rule differ depending on whether it performs an evaluation that is triggered by configuration changes or triggered periodically.

For information about common patterns within AWS Lambda functions, see Programming Model in the *AWS Lambda Developer Guide*.

Contents

Example Function for Evaluations Triggered by Configuration Changes

AWS Config will invoke a function like the following example when it detects a configuration change for a resource that is within a custom rule's scope.

If you use the AWS Config console to create a rule that is associated with a function like this example, choose **Configuration changes** as the trigger type. If you use the AWS Config API or AWS CLI to create the rule, set the `MessageType` attribute to `ConfigurationItemChangeNotification` and `OversizedConfigurationItemChangeNotification`. These settings enable your rule to be triggered whenever AWS Config generates a configuration item or an oversized configuration item as a result of a resource change.

This example evaluates your resources and checks whether the instances match the resource type, `AWS::EC2::Instance`. The rule is triggered when AWS Config generates a configuration item or an oversized configuration item notification.

```
'use strict';
```

```
const aws = require('aws-sdk');

const config = new aws.ConfigService();


// Helper function used to validate input
function checkDefined(reference, referenceName) {
    if (!reference) {
        throw new Error(`Error: ${referenceName} is not defined`);
    }
    return reference;
}

// Check whether the message type is OversizedConfigurationItemChangeNotification,
function isOverSizedChangeNotification(messageType) {
    checkDefined(messageType, 'messageType');
    return messageType === 'OversizedConfigurationItemChangeNotification';
}

// Get the configurationItem for the resource using the getResourceConfigHistory API.
function getConfiguration(resourceType, resourceId, configurationCaptureTime, callback) {
    config.getResourceConfigHistory({ resourceType, resourceId, laterTime: new
 Date(configurationCaptureTime), limit: 1 }, (err, data) => {
        if (err) {
            callback(err, null);
        }
        const configurationItem = data.configurationItems[0];
        callback(null, configurationItem);
    });
}

// Convert the oversized configuration item from the API model to the original invocation
 model.
function convertApiConfiguration(apiConfiguration) {
    apiConfiguration.awsAccountId = apiConfiguration.accountId;
    apiConfiguration.ARN = apiConfiguration.arn;
    apiConfiguration.configurationStateMd5Hash = apiConfiguration.configurationItemMD5Hash;
    apiConfiguration.configurationItemVersion = apiConfiguration.version;
    apiConfiguration.configuration = JSON.parse(apiConfiguration.configuration);
    if ({}.hasOwnProperty.call(apiConfiguration, 'relationships')) {
        for (let i = 0; i < apiConfiguration.relationships.length; i++) {
            apiConfiguration.relationships[i].name =
 apiConfiguration.relationships[i].relationshipName;
        }
    }
    return apiConfiguration;
}

// Based on the message type, get the configuration item either from the configurationItem
 object in the invoking event or with the getResourceConfigHistory API in the
 getConfiguration function.
function getConfigurationItem(invokingEvent, callback) {
    checkDefined(invokingEvent, 'invokingEvent');
    if (isOverSizedChangeNotification(invokingEvent.messageType)) {
       const configurationItemSummary =
 checkDefined(invokingEvent.configurationItemSummary, 'configurationItemSummary');
        getConfiguration(configurationItemSummary.resourceType,
 configurationItemSummary.resourceId,
 configurationItemSummary.configurationItemCaptureTime, (err, apiConfigurationItem) => {
            if (err) {
                callback(err);
            }
            const configurationItem = convertApiConfiguration(apiConfigurationItem);
            callback(null, configurationItem);
       });
    } else {
        checkDefined(invokingEvent.configurationItem, 'configurationItem');
        callback(null, invokingEvent.configurationItem);
    }
}

// Check whether the resource has been deleted. If the resource was deleted, then the
 evaluation returns not applicable.
function isApplicable(configurationItem, event) {
    checkDefined(configurationItem, 'configurationItem');
    checkDefined(event, 'event');
    const status = configurationItem.configurationItemStatus;
    const eventLeftScope = event.eventLeftScope;
    return (status === 'OK' || status === 'ResourceDiscovered') && eventLeftScope ===
 false;
}

// In this example, the resource is compliant if it is an instance and its type matches the
 type specified as the desired type.
// If the resource is not an instance, then this resource is not applicable.
function evaluateChangeNotificationCompliance(configurationItem, ruleParameters) {
    checkDefined(configurationItem, 'configurationItem');
    checkDefined(configurationItem.configuration, 'configurationItem.configuration');
    checkDefined(ruleParameters, 'ruleParameters');

    if (configurationItem.resourceType !== 'AWS::EC2::Instance') {
        return 'NOT_APPLICABLE';
    } else if (ruleParameters.desiredInstanceType ===
 configurationItem.configuration.instanceType) {
        return 'COMPLIANT';
    }
    return 'NON_COMPLIANT';
}

// Receives the event and context from AWS Lambda.
exports.handler = (event, context, callback) => {
    checkDefined(event, 'event');
    const invokingEvent = JSON.parse(event.invokingEvent);
    const ruleParameters = JSON.parse(event.ruleParameters);
    getConfigurationItem(invokingEvent, (err, configurationItem) => {
        if (err) {
            callback(err);
        }
        let compliance = 'NOT_APPLICABLE';
        const putEvaluationsRequest = {};
        if (isApplicable(configurationItem, event)) {
            // Invoke the compliance checking function.
            compliance = evaluateChangeNotificationCompliance(configurationItem,
 ruleParameters);
        }
        // Initializes the request that contains the evaluation results.
        putEvaluationsRequest.Evaluations = [
            {
                ComplianceResourceType: configurationItem.resourceType,
                ComplianceResourceId: configurationItem.resourceId,
                ComplianceType: compliance,
                OrderingTimestamp: configurationItem.configurationItemCaptureTime,
            },
        ];
        putEvaluationsRequest.ResultToken = event.resultToken;

        // Sends the evaluation results to AWS Config.
        config.putEvaluations(putEvaluationsRequest, (error, data) => {
            if (error) {
                callback(error, null);
            } else if (data.FailedEvaluations.length > 0) {
                // Ends the function if evaluation results are not successfully reported to
 AWS Config.
                callback(JSON.stringify(data), null);
            } else {
                callback(null, data);
            }
        });
    });
};
```

Function Operations

The function performs the following operations at runtime:

1. The function runs when AWS Lambda passes the `event` object to the `handler` function. AWS Lambda also passes a `context` object, which contains information and methods that the function can use while it runs. In this example, the function accepts the optional `callback` parameter, which it uses to return information to the caller.
2. The function checks whether the `messageType` for the event is a configuration item or an oversized configuration item, and then returns the configuration item.
3. The handler calls the `isApplicable` function to determine whether the resource was deleted.
4. The handler calls the `evaluateChangeNotificationCompliance` function and passes the `configurationItem` and `ruleParameters` objects that AWS Config published in the event.

   The function first evaluates whether the resource is an EC2 instance. If the resource is not an EC2 instance, the function returns a compliance value of `NOT_APPLICABLE`.

   The function then evaluates whether the `instanceType` attribute in the configuration item is equal to the `desiredInstanceType` parameter value. If the values are equal, the function returns `COMPLIANT`. If the values are not equal, the function returns `NON_COMPLIANT`.
5. The handler prepares to send the evaluation results to AWS Config by initializing the `putEvaluationsRequest` object. This object includes the `Evaluations` parameter, which identifies the compliance result, the resource type, and the ID of the resource that was evaluated. The `putEvaluationsRequest` object also includes the result token from the event, which identifies the rule and the event for AWS Config.
6. The handler sends the evaluation results to AWS Config by passing the object to the `putEvaluations` method of the `config` client.

Example Function for Periodic Evaluations

AWS Config will invoke a function like the following example for periodic evaluations. Periodic evaluations occur at the frequency that you specify when you define the rule in AWS Config.

If you use the AWS Config console to create a rule that is associated with a function like this example, choose **Periodic** as the trigger type. If you use the AWS Config API or AWS CLI to create the rule, set the `MessageType` attribute to `ScheduledNotification`.

This example checks whether the total number of a specified resource exceeds a specified maximum.

```
var aws = require('aws-sdk'), // Loads the AWS SDK for JavaScript.
    config = new aws.ConfigService(), // Constructs a service object to use the
 aws.ConfigService class.
    COMPLIANCE_STATES = {
        COMPLIANT : 'COMPLIANT',
        NON_COMPLIANT : 'NON_COMPLIANT',
        NOT_APPLICABLE : 'NOT_APPLICABLE'
    };
```

```
// Receives the event and context from AWS Lambda.
exports.handler = function(event, context, callback) {
    // Parses the invokingEvent and ruleParameters values, which contain JSON objects
 passed as strings.
    var invokingEvent = JSON.parse(event.invokingEvent),
        ruleParameters = JSON.parse(event.ruleParameters),
        noOfResources = 0;

    if (isScheduledNotification(invokingEvent)) {
        countResourceTypes(ruleParameters.applicableResourceType, "", noOfResources,
 function(err, count) {
            if (err === null) {
                var putEvaluationsRequest;
                // Initializes the request that contains the evaluation results.
                putEvaluationsRequest = {
                    Evaluations : [ {
                        // Applies the evaluation result to the AWS account published in
 the event.
                        ComplianceResourceType : 'AWS::::Account',
                        ComplianceResourceId : event.accountId,
                        ComplianceType : evaluateCompliance(ruleParameters.maxCount,
 count),
                        OrderingTimestamp : new Date()
                    } ],
                    ResultToken : event.resultToken
                };
                // Sends the evaluation results to AWS Config.
                config.putEvaluations(putEvaluationsRequest, function(err, data) {
                    if (err) {
                        callback(err, null);
                    } else {
                        if (data.FailedEvaluations.length > 0) {
                            // Ends the function execution if evaluation results are not
 successfully reported
                            callback(JSON.stringify(data));
                        }
                        callback(null, data);
                    }
                });
            } else {
                callback(err, null);
            }
        });
    } else {
        console.log("Invoked for a notification other than Scheduled Notification...
 Ignoring.");
    }
};

// Checks whether the invoking event is ScheduledNotification.
function isScheduledNotification(invokingEvent) {
    return (invokingEvent.messageType === 'ScheduledNotification');
}

// Checks whether the compliance conditions for the rule are violated.
function evaluateCompliance(maxCount, actualCount) {
    if (actualCount > maxCount) {
        return COMPLIANCE_STATES.NON_COMPLIANT;
    } else {
        return COMPLIANCE_STATES.COMPLIANT;
    }
}

// Counts the applicable resources that belong to the AWS account.
function countResourceTypes(applicableResourceType, nextToken, count, callback) {
    config.listDiscoveredResources({resourceType : applicableResourceType, nextToken :
 nextToken}, function(err, data) {
        if (err) {
            callback(err, null);
        } else {
            count = count + data.resourceIdentifiers.length;
            if (data.nextToken !== undefined && data.nextToken != null) {
                countResourceTypes(applicableResourceType, data.nextToken, count,
 callback);
            }
            callback(null, count);
        }
    });
    return count;
}
```

Function Operations

The function performs the following operations at runtime:

1. The function runs when AWS Lambda passes the `event` object to the `handler` function. AWS Lambda also passes a `context` object, which contains information and methods that the function can use while it runs. In this example, the function accepts the optional `callback` parameter, which it uses to return information to the caller.
2. To count the resources of the specified type, the handler calls the `countResourceTypes` function, and it passes the `applicableResourceType` parameter that it received from the event. The `countResourceTypes` function calls the `listDiscoveredResources` method of the `config` client, which returns a list of identifiers for the applicable resources. The function uses the length of this list to determine the number of applicable resources, and it returns this count to the handler.
3. The handler prepares to send the evaluation results to AWS Config by initializing the `putEvaluationsRequest` object. This object includes the `Evaluations` parameter, which identifies the compliance result and the AWS account that was published in the event. You can use the `Evaluations` parameter to apply the result to any resource type that is supported by AWS Config. The `putEvaluationsRequest` object also includes the result token from the event, which identifies the rule and the event for AWS Config.
4. Within the `putEvaluationsRequest` object, the handler calls the `evaluateCompliance` function. This function tests whether the number of applicable resources exceeds the maximum assigned to the `maxCount` parameter, which was provided by the event. If the number of resources exceeds the maximum, the function returns `NON_COMPLIANT`. If the number of resources does not exceed the maximum, the function returns `COMPLIANT`.
5. The handler sends the evaluation results to AWS Config by passing the object to the `putEvaluations` method of the `config` client.

Example Events for AWS Config Rules

When the trigger for a rule occurs, AWS Config invokes the rule's AWS Lambda function by publishing an event. Then AWS Lambda executes the function by passing the event to the function's handler.

Example Event for Evaluations Triggered by Configuration Changes

AWS Config publishes an event when it detects a configuration change for a resource that is within a rule's scope. The following example event shows that the rule was triggered by a configuration change for an EC2 instance.

```
{
    "invokingEvent": "{\"configurationItem\":{\"configurationItemCaptureTime\":
\"2016-02-17T01:36:34.043Z\",\"awsAccountId\":\"123456789012\",\"configurationItemStatus\":
```

```
\"OK\",\"resourceId\":\"i-00000000\",\"ARN\":\"arn:aws:ec2:us-east-2:123456789012:instance/
i-00000000\",\"awsRegion\":\"us-east-2\",\"availabilityZone\":\"us-east-2a\",
\"resourceType\":\"AWS::EC2::Instance\",\"tags\":{\"Foo\":\"Bar\"},\"relationships\":
[{\"resourceId\":\"eipalloc-00000000\",\"resourceType\":\"AWS::EC2::EIP\",\"name\":
\"Is attached to ElasticIp\"}],\"configuration\":{\"foo\":\"bar\"}},\"messageType\":
\"ConfigurationItemChangeNotification\"}",
    "ruleParameters": "{\"myParameterKey\":\"myParameterValue\"}",
    "resultToken": "myResultToken",
    "eventLeftScope": false,
    "executionRoleArn": "arn:aws:iam::123456789012:role/config-role",
    "configRuleArn": "arn:aws:config:us-east-2:123456789012:config-rule/config-
rule-0123456",
    "configRuleName": "change-triggered-config-rule",
    "configRuleId": "config-rule-0123456",
    "accountId": "123456789012",
    "version": "1.0"
}
```

Example Event for Evaluations Triggered by Oversized Configuration Changes

Some resource changes generate oversized configuration items. The following example event shows that the rule was triggered by an oversized configuration change for an EC2 instance.

```
{
        "invokingEvent": "{\"configurationItemSummary\": {\"changeType\": \"UPDATE
\",\"configurationItemVersion\": \"1.2\",\"configurationItemCaptureTime\":
\"2016-10-06T16:46:16.261Z\",\"configurationStateId\": 0,\"awsAccountId\":\"123456789012\",
\"configurationItemStatus\": \"OK\",\"resourceType\": \"AWS::EC2::Instance\",
\"resourceId\":\"i-00000000\",\"resourceName\":null,\"ARN\":\"arn:aws:ec2:us-
west-2:123456789012:instance/i-00000000\",\"awsRegion\": \"us-west-2\",\"availabilityZone
\":\"us-west-2a\",\"configurationStateMd5Hash\":\"8f1ee69b287895a0f8bc5753eca68e96\",
\"resourceCreationTime\":\"2016-10-06T16:46:10.489Z\"},\"messageType\":
\"OversizedConfigurationItemChangeNotification\"}",
        "ruleParameters": "{\"myParameterKey\":\"myParameterValue\"}",
        "resultToken": "myResultToken",
        "eventLeftScope": false,
        "executionRoleArn": "arn:aws:iam::123456789012:role/config-role",
        "configRuleArn": "arn:aws:config:us-east-2:123456789012:config-rule/config-rule-
ec2-managed-instance-inventory",
        "configRuleName": "change-triggered-config-rule",
        "configRuleId": "config-rule-0123456",
        "accountId": "123456789012",
        "version": "1.0"
    }
```

Example Event for Evaluations Triggered by Periodic Frequency

AWS Config publishes an event when it evaluates your resources at a frequency that you specify (such as every 24 hours). The following example event shows that the rule was triggered by a periodic frequency.

```
{
    "invokingEvent": "{\"awsAccountId\":\"123456789012\",\"notificationCreationTime\":
\"2016-07-13T21:50:00.373Z\",\"messageType\":\"ScheduledNotification\",\"recordVersion\":
\"1.0\"}",
    "ruleParameters": "{\"myParameterKey\":\"myParameterValue\"}",
    "resultToken": "myResultToken",
    "eventLeftScope": false,
    "executionRoleArn": "arn:aws:iam::123456789012:role/config-role",
    "configRuleArn": "arn:aws:config:us-east-2:123456789012:config-rule/config-
rule-0123456",
    "configRuleName": "periodic-config-rule",
    "configRuleId": "config-rule-6543210",
    "accountId": "123456789012",
    "version": "1.0"
}
```

Event Attributes

The JSON object for an AWS Config event contains the following attributes:

`invokingEvent`

The event that triggers the evaluation for a rule. If the event is published in response to a resource configuration change, the value for this attribute is a string that contains a JSON `configurationItem` or a `configurationItemSummary` (for oversized configuration items). The configuration item represents the state of the resource at the moment that AWS Config detected the change. For an example of a configuration item, see the output produced by the `get-resource-config-history` AWS CLI command in Viewing Configuration History (p. 35).

If the event is published for a periodic evaluation, the value is a string that contains a JSON object. The object includes information about the evaluation that was triggered.

For each type of event, a function must parse the string with a JSON parser to be able to evaluate its contents, as shown in the following Node.js example:

```
var invokingEvent = JSON.parse(event.invokingEvent);
```

`ruleParameters`

Key/value pairs that the function processes as part of its evaluation logic. You define parameters when you use the AWS Config console to create a custom rule. You can also define parameters with the `InputParameters` attribute in the `PutConfigRule` AWS Config API request or the `put-config-rule` AWS CLI command.

The JSON code for the parameters is contained within a string, so a function must parse the string with a JSON parser to be able to evaluate its contents, as shown in the following Node.js example:

```
var ruleParameters = JSON.parse(event.ruleParameters);
```

`resultToken`

A token that the function must pass to AWS Config with the `PutEvaluations` call.

`eventLeftScope`

A Boolean value that indicates whether the AWS resource to be evaluated has been removed from the rule's scope. If the value is `true`, the function indicates that the evaluation can be ignored by passing `NOT_APPLICABLE` as the value for the `ComplianceType` attribute in the `PutEvaluations` call.

`executionRoleArn`

The ARN of the IAM role that is assigned to AWS Config.

`configRuleArn`

The ARN that AWS Config assigned to the rule.

`configRuleName`

The name that you assigned to the rule that caused AWS Config to publish the event and invoke the function.

`configRuleId`

The ID that AWS Config assigned to the rule.

`accountId`

The ID of the AWS account that owns the rule.

`version`

A version number assigned by AWS. The version will increment if AWS adds attributes to AWS Config events. If a function requires an attribute that is only in events that match or exceed a specific version, then that function can check the value of this attribute.

The current version for AWS Config events is 1.0.

Managing your AWS Config Rules

You can use the AWS Config console, AWS CLI, and AWS Config API to view, add, and delete your rules.

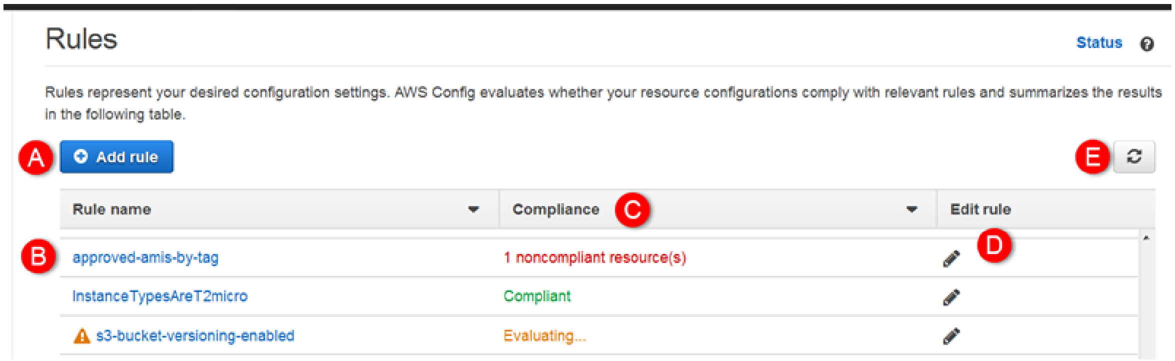
Contents

Add, View, Update and Delete Rules (Console)

On the **Rules** page, you can view the rules for the region in your account. You can also see the evaluation status for each rule.

To view your rules

1. Sign in to the AWS Management Console and open the AWS Config console at https://console.aws.amazon.com/config/.
2. In the AWS Management Console, verify that the region selector is set to a region that supports AWS Config rules. For the list of supported regions, see AWS Config Regions and Endpoints in the *Amazon Web Services General Reference*.
3. Choose **Rules**. The **Rules** page shows your rules and the compliance status for each.



Rules

Rules represent your desired configuration settings. AWS Config evaluates whether your resource configurations comply with relevant rules and summarizes the results in the following table.

Rule name	Compliance	Edit rule
approved-amis-by-tag	1 noncompliant resource(s)	✎
InstanceTypesAreT2micro	Compliant	✎
⚠ s3-bucket-versioning-enabled	Evaluating...	✎

A. Choose **Add rule** to get started with creating a rule.

B. Choose a rule name to see its settings.

C. See the compliance status of the rule when it evaluates your resources.

D. Choose the **Edit rule** icon (✎) to edit the rule.

E. Choose the refresh (⟳) icon to reload compliance results.

To update a rule

1. Choose the **Edit rule** icon (✎) for the rule that you want to update.
2. Modify the settings on the **Config rule** page to change your rule as needed.
3. Choose **Save**.

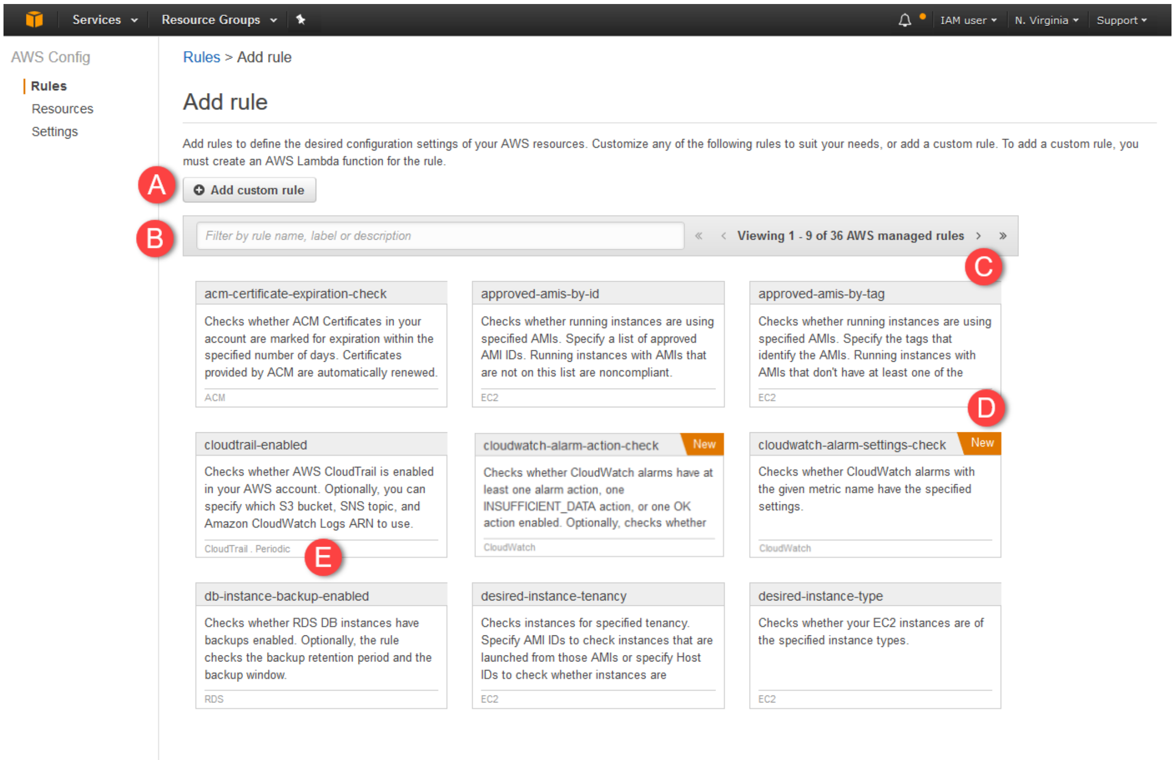
To delete a rule

1. Choose the **Edit rule** icon (✎) for the rule that you want to delete.
2. On the **Configure rule** page, choose **Delete rule**.
3. When prompted, choose **Delete**.

To add a rule

If you choose **Add rule**, you can see the available AWS managed rules on the **Add rule** page. You can also create your own custom rule.

1. If you want to create your own rule, choose **Add custom rule** and follow the procedure in Developing a Custom Rule for AWS Config (p. 148).
2. To add a managed rule, choose a rule on the page and follow the procedure in Working with AWS Config Managed Rules (p. 144).



Rules > Add rule

Add rule

Add rules to define the desired configuration settings of your AWS resources. Customize any of the following rules to suit your needs, or add a custom rule. To add a custom rule, you must create an AWS Lambda function for the rule.

Add custom rule

Filter by rule name, label or description

Viewing 1 - 9 of 36 AWS managed rules

acm-certificate-expiration-check
Checks whether ACM Certificates in your account are marked for expiration within the specified number of days. Certificates provided by ACM are automatically renewed.
ACM

approved-amis-by-id
Checks whether running instances are using specified AMIs. Specify a list of approved AMI IDs. Running instances with AMIs that are not on this list are noncompliant.
EC2

approved-amis-by-tag
Checks whether running instances are using specified AMIs. Specify the tags that identify the AMIs. Running instances with AMIs that don't have at least one of the
EC2

cloudtrail-enabled
Checks whether AWS CloudTrail is enabled in your AWS account. Optionally, you can specify which S3 bucket, SNS topic, and Amazon CloudWatch Logs ARN to use.
CloudTrail . Periodic

cloudwatch-alarm-action-check New
Checks whether CloudWatch alarms have at least one alarm action, one INSUFFICIENT_DATA action, or one OK action enabled. Optionally, checks whether
CloudWatch

cloudwatch-alarm-settings-check New
Checks whether CloudWatch alarms with the given metric name have the specified settings.
CloudWatch

db-instance-backup-enabled
Checks whether RDS DB instances have backups enabled. Optionally, the rule checks the backup retention period and the backup window.
RDS

desired-instance-tenancy
Checks instances for specified tenancy. Specify AMI IDs to check instances that are launched from those AMIs or specify Host IDs to check whether instances are
EC2

desired-instance-type
Checks whether your EC2 instances are of the specified instance types.
EC2

On the **Add rule** page, you can do the following:

A. Choose **Add custom rule** to create your own rule.

B. Type in the search field to filter results by rule name, description, or label. For example, type **EC2** to return rules that evaluate EC2 resource types or type **periodic** to return rules with periodic triggers. Type "new" to search for newly added rules. For more information about trigger types, see Specifying Triggers for AWS Config Rules (p. 96).

C. Choose the arrow icon to see the next page of rules.

D. Recently added rules are marked as **New**.

E. See the labels to identify the resource type that the rule evaluates and if the rule has a periodic trigger.

View, Update, and Delete Rules (AWS CLI)

To view your rules

- Use the `describe-config-rules` command:

  ```
  $ aws configservice describe-config-rules
  ```

  AWS Config returns the details for all of your rules.

To update a rule

1. Use the `put-config-rule` command with the `--generate-cli-skeleton` parameter to create a local JSON file that has the parameters for your rule:

   ```
   $ aws configservice put-config-rule --generate-cli-skeleton > putConfigRule.json
   ```

2. Open the JSON file in a text editor and remove any parameters that don't need updating, with the following exceptions:

   - Include at least one of the following parameters to identify the rule:

     `ConfigRuleName`, `ConfigRuleArn`, or `ConfigRuleId`.
   - If you are updating a custom rule, you must include the `Source` object and its parameters.

3. Fill in the values for the parameters that remain. To reference the details of your rule, use the **describe-config-rules** command.

   For example, the following JSON code updates the resource types that are in the scope of a custom rule:

   ```
   {
     "ConfigRule": {
       "ConfigRuleName": "ConfigRuleName",
       "Scope": {
         "ComplianceResourceTypes": [
           "AWS::EC2::Instance",
           "AWS::EC2::Volume",
           "AWS::EC2::VPC"
         ]
       },
       "Source": {
         "Owner": "CUSTOM_LAMBDA",
         "SourceIdentifier": "arn:aws:lambda:us-
   east-2:123456789012:function:ConfigRuleName",
         "SourceDetails": [
   ```

```
        {
          "EventSource": "aws.config",
          "MessageType": "ConfigurationItemChangeNotification"
        }
      ]
    }
  }
}
```

4. Use the `put-config-rule` command with the `--cli-input-json` parameter to pass your JSON configuration to AWS Config:

```
$ aws configservice put-config-rule --cli-input-json file://putConfigRule.json
```

5. To verify that you successfully updated your rule, use the **describe-config-rules** command to view the rule's configuration:

```
$ aws configservice describe-config-rules --config-rule-name ConfigRuleName
{
    "ConfigRules": [
        {
            "ConfigRuleState": "ACTIVE",
            "ConfigRuleName": "ConfigRuleName",
            "ConfigRuleArn": "arn:aws:config:us-east-2:123456789012:config-rule/config-
rule-nnnnnn",
            "Source": {
                "Owner": "CUSTOM_LAMBDA",
                "SourceIdentifier": "arn:aws:lambda:us-
east-2:123456789012:function:ConfigRuleName",
                "SourceDetails": [
                    {
                        "EventSource": "aws.config",
                        "MessageType": "ConfigurationItemChangeNotification"
                    }
                ]
            },
            "Scope": {
                "ComplianceResourceTypes": [
                    "AWS::EC2::Instance",
                    "AWS::EC2::Volume",
                    "AWS::EC2::VPC"
                ]
            },
            "ConfigRuleId": "config-rule-nnnnnn"
        }
    ]
}
```

To delete a rule

- Use the `delete-config-rule` command as shown in the following example:

```
$ aws configservice delete-config-rule --config-rule-name ConfigRuleName
```

View, Update, and Delete Rules (API)

To view your rules

Use the DescribeConfigRules action.

To update or add a rule

Use the PutConfigRule action.

To delete a rule

Use the DeleteConfigRule action.

> **Note**
> If a rule is creating invalid evaluation results, you might want to delete these results before you fix the rule and run a new evaluation. For more information, see Deleting Evaluation Results (p. 165).

Evaluating Your Resources

When you create custom rules or use managed rules, AWS Config evaluates your resources against those rules. You can run on-demand evaluations for resources against your rules. For example, this is helpful when you create a custom rule and want to verify that AWS Config is correctly evaluating your resources or to identify if there is an issue with the evaluation logic of your AWS Lambda function.

Example

1. You create a custom rule that evaluates whether your IAM users have active access keys.
2. AWS Config evaluates the resources against your custom rule.
3. An IAM user who doesn't have an active access key exists in your account. Your rule doesn't correctly flag this resource as noncompliant.
4. You fix the rule and start the evaluation again.
5. Because you fixed your rule, the rule correctly evaluates your resources, and flags the IAM user resource as noncompliant.

Evaluating your Resources (Console)

1. Sign in to the AWS Management Console and open the AWS Config console at https://console.aws.amazon.com/config/.
2. In the AWS Management Console menu, verify that the region selector is set to a region that supports AWS Config rules. For the list of supported regions, see AWS Config Regions and Endpoints in the *Amazon Web Services General Reference*.
3. In the navigation pane, choose **Rules**. The **Rules** page shows your rules and the compliance status for each.
4. Choose a rule from the list.
5. In the **Re-evaluate rule** section, choose **Re-evaluate**.
6. AWS Config starts evaluating the resources against your rule.

> **Note**
> You can re-evaluate a rule once per minute. You must wait for AWS Config to complete the evaluation for your rule before you start another evaluation. You can't run an evaluation if at the same time the rule is being updated or if the rule is being deleted.

Evaluating your Resources (CLI)

- Use the **start-config-rules-evaluation** command.

```
$ aws configservice start-config-rules-evaluation --config-rule-names ConfigRuleName
```

AWS Config starts evaluating the recorded resource configurations against your rule.

You can also specify multiple rules in your request.

```
aws configservice start-config-rules-evaluation --config-rule-
names ConfigRuleName1 ConfigRuleName2 ConfigRuleName3
```

Evaluating your Resources (API)

Use the StartConfigRulesEvaluation action.

Deleting Evaluation Results

After AWS Config evaluates your rule, you can see the evaluation results on the **Rules** page or the **Rules details** page for the rule. If the evaluation results are incorrect or if you want to evaluate again, you can delete the current evaluation results for the rule. For example, if your rule was incorrectly evaluating your resources or you recently deleted resources from your account, you can delete the evaluation results and then run a new evaluation.

Deleting Evaluating Results (Console)

1. Sign in to the AWS Management Console and open the AWS Config console at https://console.aws.amazon.com/config/.
2. In the AWS Management Console menu, verify that the region selector is set to a region that supports AWS Config rules. For the list of supported regions, see AWS Config Regions and Endpoints in the *Amazon Web Services General Reference*.
3. In the navigation pane, choose **Rules**. The **Rules** page shows your rules and the compliance status.
4. Choose a rule from the list.
5. In the **Delete evaluation results** section, choose **Delete results**. AWS Config deletes the evaluation results for this rule.
6. When prompted, choose **Delete**. Deleted evaluations can't be retrieved.
7. After the evaluation results are deleted, you can manually start a new evaluation.

Deleting Evaluating Results (CLI)

- Use the **delete-evaluation-results** command:

```
$ aws configservice delete-evaluation-results --config-rule-name ConfigRuleName
```

AWS Config deletes the evaluation results for the rule.

Deleting Evaluating Results (API)

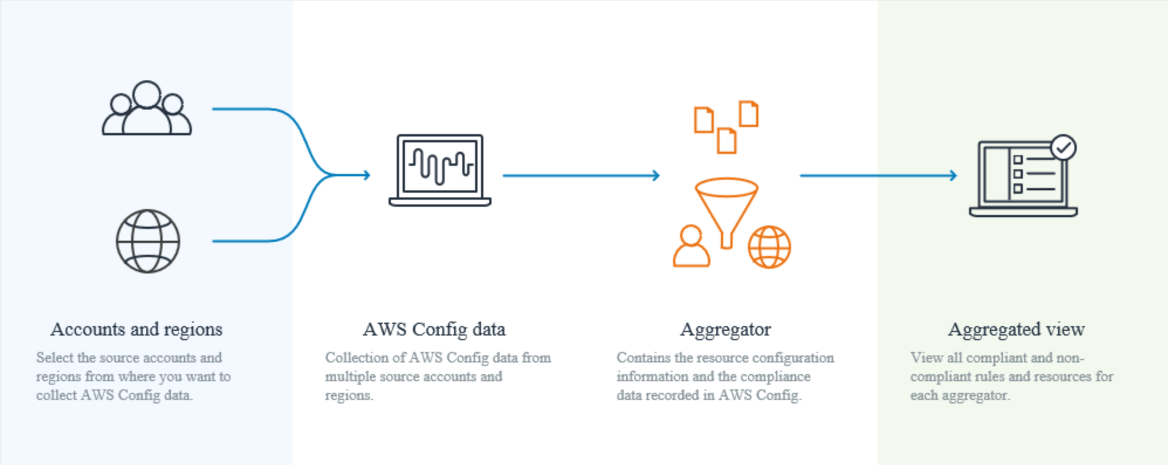
Use the DeleteEvaluationResults action.

Multi-Account Multi-Region Data Aggregation

An aggregator is an AWS Config resource type that collects AWS Config data from the following:

- Multiple accounts and multiple regions.
- Single account and multiple regions.
- An organization in AWS Organizations and all the accounts in that organization.

Use an aggregator to view the resource configuration and compliance data recorded in AWS Config.


Accounts and regions
Select the source accounts and regions from where you want to collect AWS Config data.
AWS Config data
Collection of AWS Config data from multiple source accounts and regions.
Aggregator
Contains the resource configuration information and the compliance data recorded in AWS Config.
Aggregated view
View all compliant and non-compliant rules and resources for each aggregator.

For more information about concepts, see Multi-Account Multi-Region Data Aggregation (p. 5) section in the Concepts topic.

To collect your AWS Config data from source accounts and regions, start with:

1. Adding an aggregator to aggregate AWS Config data from multiple accounts and regions.
2. Authorizing aggregator accounts to collect AWS Config data. Authorization is required when your source accounts are individual accounts. Authorization is not required if you are aggregating source accounts that are part of AWS Organizations.
3. Monitoring compliance data for rules and accounts in the aggregated view.

Region Support

Currently, multi-account multi-region data aggregation is supported in the following regions:

Region Name	Region	Endpoint	Protocol
Asia Pacific (Mumbai)	ap-south-1	config.ap-south-1.amazonaws.com	HTTPS

Region Name	Region	Endpoint	Protocol
Asia Pacific (Seoul)	ap-northeast-2	config.ap-northeast-2.amazonaws.com	HTTPS
Asia Pacific (Singapore)	ap-southeast-1	config.ap-southeast-1.amazonaws.com	HTTPS
Asia Pacific (Sydney)	ap-southeast-2	config.ap-southeast-2.amazonaws.com	HTTPS
Asia Pacific (Tokyo)	ap-northeast-1	config.ap-northeast-1.amazonaws.com	HTTPS
Canada (Central)	ca-central-1	config.ca-central-1.amazonaws.com	HTTPS
EU (Frankfurt)	eu-central-1	config.eu-central-1.amazonaws.com	HTTPS
EU (Ireland)	eu-west-1	config.eu-west-1.amazonaws.com	HTTPS
EU (London)	eu-west-2	config.eu-west-2.amazonaws.com	HTTPS
EU (Paris)	eu-west-3	config.eu-west-3.amazonaws.com	HTTPS
South America (São Paulo)	sa-east-1	config.sa-east-1.amazonaws.com	HTTPS
US East (N. Virginia)	us-east-1	config.us-east-1.amazonaws.com	HTTPS
US East (Ohio)	us-east-2	config.us-east-2.amazonaws.com	HTTPS
US West (N. California)	us-west-1	config.us-west-1.amazonaws.com	HTTPS
US West (Oregon)	us-west-2	config.us-west-2.amazonaws.com	HTTPS

Learn More

Topics

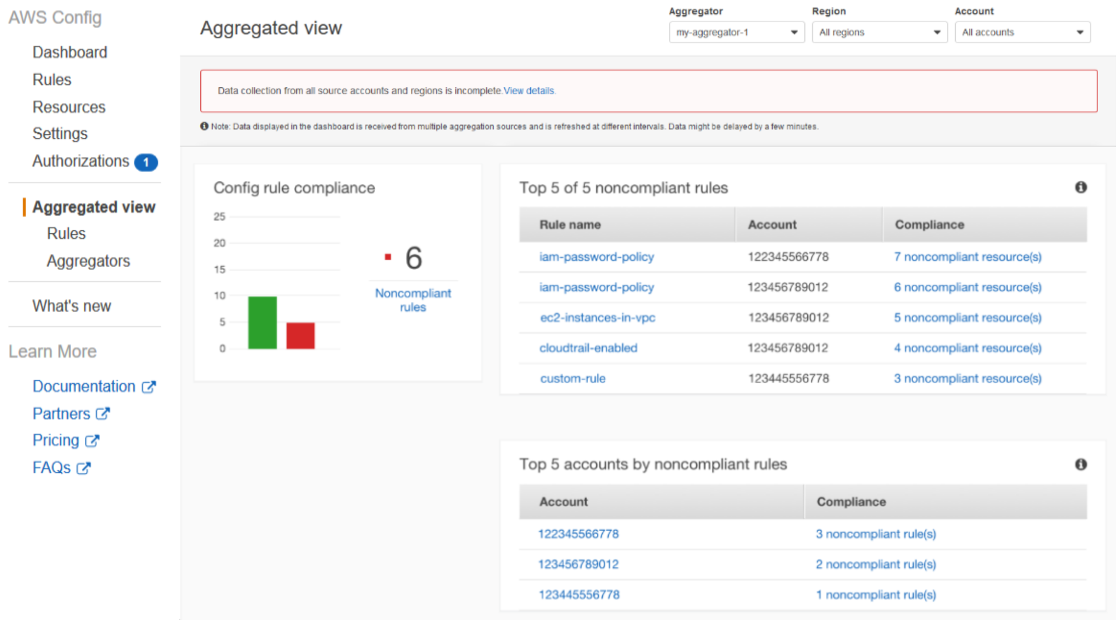
Viewing Compliance Data in the Aggregated View

The **Aggregated view** page displays an overview of your rules and their compliance state. It provides a graph of compliant and noncompliant rules. Noncompliant rules are ranked by highest number of noncompliant resources and source accounts with highest number of noncompliant rules.

After setup, AWS Config starts aggregating data from the specified source accounts into an aggregator. It might take a few minutes for AWS Config to display the compliance status of rules on this page.

Use the Aggregated View

1. Sign in to the AWS Management Console and open the AWS Config console at https://console.aws.amazon.com/config/.
2. In the navigation pane, choose **Aggregated view**, and then review your rules and their compliance states.



Aggregated view

Aggregator: my-aggregator-1

Region: All regions

Account: All accounts

Data collection from all source accounts and regions is incomplete. View details.

Note: Data displayed in the dashboard is received from multiple aggregation sources and is refreshed at different intervals. Data might be delayed by a few minutes.

Config rule compliance

Top 5 of 5 noncompliant rules

Rule name	Account	Compliance
iam-password-policy	122345566778	7 noncompliant resource(s)
iam-password-policy	123456789012	6 noncompliant resource(s)
ec2-instances-in-vpc	123456789012	5 noncompliant resource(s)
cloudtrail-enabled	123456789012	4 noncompliant resource(s)
custom-rule	123445556778	3 noncompliant resource(s)

Top 5 accounts by noncompliant rules

Account	Compliance
122345566778	3 noncompliant rule(s)
123456789012	2 noncompliant rule(s)
123445556778	1 noncompliant rule(s)

On the **Aggregated view** page, you can do the following:

- Choose an aggregator from the **Aggregator** list.
- Choose the region from the **Region** list. By default, **All regions** is selected.
- Choose an account from the **Account** list. By default, **All accounts** is selected.
- View the top five noncompliant rules, in descending order according to the number of noncompliant resources. Choose a rule to go to the **Rule details** page.
- View the top five accounts by noncompliant rules, in descending order according to the number of noncompliant rules. Choose an account to go to the **Aggregated Rules** page. On this page, you can view all the aggregated rules for an account.

Note

Data displayed on the tiles is subject to delays.

The **Data collection from all source accounts and regions is incomplete** message is displayed in the aggregated view for the following reasons:

- AWS Config noncompliant rules transfer is in progress.

- AWS Config can't find rules to match the filter. Select the appropriate account or region and try again.

The **Data collection from your organization is incomplete. You can view the below data only for 24 hours.** message is displayed in the aggregated view for the following reasons:

- AWS Config is unable to access your organization details due to invalid IAM role. If the IAM role is invalid for more than 24 hours, AWS Config deletes data for entire organization.
- AWS Config service access is disabled in your organization.

Learn More

- AWS Config Concepts (p. 2)
- Setting Up an Aggregator Using the Console (p. 169)
- Authorizing Aggregator Accounts to Collect AWS Config Data Using the Console (p. 175)
- Troubleshooting for Multi-Account Multi-Region Data Aggregation (p. 178)

Setting Up an Aggregator Using the Console

On the **Aggregator** page, you can do the following:

- Create an aggregator by specifying the source account IDs or organization and regions from which you want to aggregate data.
- Edit and delete an aggregator.

Topics

Add an Aggregator

1. Sign in to the AWS Management Console and open the AWS Config console at https://console.aws.amazon.com/config/.
2. Navigate to the **Aggregators** page and choose **Add aggregator**.
3. **Allow data replication**, gives permission to AWS Config to replicate data from the source accounts into an aggregator account.

   Choose **Allow AWS Config to replicate data from source account(s) into an aggregator account. You must select this checkbox to continue to add an aggregator**.
4. For **Aggregator name**, type the name for your aggregator.

   The aggregator name must be a unique name with a maximum of 64 alphanumeric characters. The name can contain hyphens and underscores.
5. For **Select source accounts**, either choose **Add individual account IDs** or **Add my organization** from which you want to aggregate data.

   - If you choose **Add individual account IDs**, you can add individual account IDs for an aggregator account.

   1. Choose **Add source accounts** to add account IDs.
   2. Choose **Add AWS account IDs** to manually add comma-separated AWS account IDs. If you want to aggregate data from the current account, type the account ID of the account.

      OR

      Choose **Upload a file** to upload a file (.txt or .csv) of comma-separated AWS account IDs.
   3. Choose **Add source accounts** to confirm your selection.
- If you choose **Add my organization**, you can add all accounts in your organization to an aggregator account.

   Note
   You must be signed in to the master account and all features must be enabled in your organization. This option automatically enables the integration between AWS Config and AWS Organizations.

   1. Choose **Choose IAM role** to create an IAM role or choose an existing IAM role from your account.

      You must assign an IAM role to allow AWS Config to call read-only APIs for your organization.
   2. Choose **Create a role** and type the IAM role name to create IAM role.

      OR

      Choose **Choose a role from your account** to select an existing IAM role.

      Note
      In the IAM console, attach the `AWSConfigRoleForOrganizations` managed policy to your IAM role. Attaching this policy allows AWS Config to call AWS Organizations `DescribeOrganization`, `ListAWSServiceAccessForOrganization`, and `ListAccounts` APIs. You must edit the control policy document to include `config.amazonaws.com` trusted entity.
   3. Choose **Choose IAM role** to confirm your selection.

6. For **Regions**, choose the regions for which you want to aggregate data.

   - Select one region or multiple regions or all the AWS regions.
   - Select **Include future AWS regions** to aggregate data from all future AWS regions where multi-account multi-region data aggregation is enabled.
7. Choose **Save**. AWS Config displays the aggregator.

Edit an Aggregator

1. To make changes to the aggregator, choose the aggregator name.
2. Choose **Actions** and then choose **Edit**.
3. Use the sections on the **Edit aggregator** page to change the source accounts, IAM roles, or regions for the aggregator.

   Note
   You cannot change source type from individual account(s) to organization and vice versa.
4. Choose **Save**.

Delete an Aggregator

1. To delete an aggregator, choose the aggregator name.
2. Choose **Actions** and then choose **Delete**.

A warning message is displayed. Deleting an aggregator results in the loss of all aggregated data. You cannot recover this data but data in the source account(s) is not impacted.

3. Choose **Delete** to confirm your selection.

Learn More

- AWS Config Concepts (p. 2)
- Authorizing Aggregator Accounts to Collect AWS Config Data Using the Console (p. 175)
- Viewing Compliance Data in the Aggregated View (p. 168)
- Troubleshooting for Multi-Account Multi-Region Data Aggregation (p. 178)

Setting Up an Aggregator Using the AWS Command Line Interface

You can create, view, update, and delete AWS Config aggregator data using the AWS Command Line Interface (AWS CLI). To use the AWS Management Console, see Setting Up an Aggregator Using the Console (p. 169).

The AWS CLI is a unified tool to manage your AWS services. With just one tool to download and configure, you can control multiple AWS services from the command line and use scripts to automate them.

To install the AWS CLI on your local machine, see Installing the AWS CLI in the *AWS CLI User Guide*.

If necessary, type `aws configure` to configure the AWS CLI to use an AWS Region where AWS Config aggregators are available.

Topics

Add an Aggregator Using Individual Accounts

1. Open a command prompt or a terminal window.
2. Type the following command to create an aggregator named **`MyAggregator`**.

```
aws configservice put-configuration-aggregator --configuration-aggregator-name
 MyAggregator --account-aggregation-sources "[{\"AccountIds\": [\"AccountID1\",
\"AccountID2\",\"AccountID3\"],\"AllAwsRegions\": true}]"
```

   For `account-aggregation-sources`, type one of the following.

   - A comma-separated list of AWS account IDs for which you want to aggregate data. Wrap the account IDs in square brackets, and be sure to escape quotation marks (for example, `"[{\"AccountIds\": [\"AccountID1\",\"AccountID2\",\"AccountID3\"], \"AllAwsRegions\": true}]"`).

- You can also upload a JSON file of comma-separated AWS account IDs. Upload the file using the following syntax: `--account-aggregation-sources` *`MyFilePath/MyFile.json`*

  The JSON file must be in the following format:

```
[
    {
        "AccountIds": [
            "AccountID1",
            "AccountID2",
            "AccountID3"
        ],
        "AllAwsRegions": true
    }
]
```

3. Press Enter to execute the command.

   You should see output similar to the following:

```
{
    "ConfigurationAggregator": {
        "ConfigurationAggregatorArn": "arn:aws:config:Region:AccountID:config-
aggregator/config-aggregator-floqpus3",
        "CreationTime": 1517942461.442,
        "ConfigurationAggregatorName": "MyAggregator",
        "AccountAggregationSources": [
            {
                "AllAwsRegions": true,
                "AccountIds": [
                    "AccountID1",
                    "AccountID2",
                    "AccountID3"
                ]
            }
        ],
        "LastUpdatedTime": 1517942461.442
    }
}
```

Add an Aggregator Using AWS Organizations

Before you begin this procedure, you must be signed in to the master account and all features must be enabled in your organization.

1. Open a command prompt or a terminal window.
2. Type the following command to create an aggregator named **`MyAggregator`**.

```
aws configservice put-configuration-aggregator --configuration-aggregator-name
 MyAggregator --organization-aggregation-source "{\"RoleArn\": \"Complete-Arn\",
\"AllAwsRegions\": true}"
```

3. Press Enter to execute the command.

   You should see output similar to the following:

```
{
    "ConfigurationAggregator": {
        "ConfigurationAggregatorArn": "arn:aws:config:Region:AccountID:config-
aggregator/config-aggregator-floqpus3",
        "CreationTime": 1517942461.442,
        "ConfigurationAggregatorName": "MyAggregator",
        "OrganizationAggregationSource": {
                "AllAwsRegions": true,
                "RoleArn": "arn:aws:config:Region:AccountID:config-aggregator/config-
aggregator-floqpus3"
         },
        "LastUpdatedTime": 1517942461.442
    }
}
```

View an Aggregator

1. Type the following command:

```
aws configservice describe-configuration-aggregators
```

2. Depending on your source account you should see output similar to the following:

For individuals accounts

```
{
    "ConfigurationAggregators": [
        {
            "ConfigurationAggregatorArn": "arn:aws:config:Region:AccountID:config-
aggregator/config-aggregator-floqpus3",
            "CreationTime": 1517942461.442,
            "ConfigurationAggregatorName": "MyAggregator",
            "AccountAggregationSources": [
                {
                    "AllAwsRegions": true,
                    "AccountIds": [
                        "AccountID1",
                        "AccountID2",
                        "AccountID3"
                    ]
                }
            ],
            "LastUpdatedTime": 1517942461.455
        }
    ]
}
```

OR

For an organization

```
{
    "ConfigurationAggregator": {
        "ConfigurationAggregatorArn": "arn:aws:config:Region:AccountID:config-
aggregator/config-aggregator-floqpus3",
        "CreationTime": 1517942461.442,
        "ConfigurationAggregatorName": "MyAggregator",
        "OrganizationAggregationSource": {
                "AllAwsRegions": true,
                "RoleArn": "arn:aws:config:Region:AccountID:config-aggregator/config-
aggregator-floqpus3"
         },
        "LastUpdatedTime": 1517942461.442
    }
}
```

Edit an Aggregator

1. You can use the `put-configuration-aggregator` command to update or edit a configuration aggregator.

   Type the following command to add a new account ID to **`MyAggregator`**:

   ```
   aws configservice put-configuration-aggregator --configuration-aggregator-name
    MyAggregator --account-aggregation-sources "[{\"AccountIds\": [\"AccountID1\",
   \"AccountID2\",\"AccountID3\"],\"AllAwsRegions\": true}]"
   ```

2. Depending on your source account you should see output similar to the following:

   For individuals accounts

   ```
   {
       "ConfigurationAggregator": {
           "ConfigurationAggregatorArn": "arn:aws:config:Region:AccountID:config-
   aggregator/config-aggregator-xz2upuu6",
           "CreationTime": 1517952090.769,
           "ConfigurationAggregatorName": "MyAggregator",
           "AccountAggregationSources": [
               {
                   "AllAwsRegions": true,
                   "AccountIds": [
                       "AccountID1",
                       "AccountID2",
                       "AccountID3",
                       "AccountID4"
                   ]
               }
           ],
           "LastUpdatedTime": 1517952566.445
       }
   }
   ```

   OR

   For an organization

   ```
   {
       "ConfigurationAggregator": {
           "ConfigurationAggregatorArn": "arn:aws:config:Region:AccountID:config-
   aggregator/config-aggregator-floqpus3",
           "CreationTime": 1517942461.442,
           "ConfigurationAggregatorName": "MyAggregator",
           "OrganizationAggregationSource": {
                   "AllAwsRegions": true,
                   "RoleArn": "arn:aws:config:Region:AccountID:config-aggregator/config-
   aggregator-floqpus3"
            },
           "LastUpdatedTime": 1517942461.442
       }
   }
   ```

Delete an Aggregator

To delete a configuration aggregator using the AWS CLI

- Type the following command:

  ```
  aws configservice delete-configuration-aggregator --configuration-aggregator-name
   MyAggregator
  ```

  If successful, the command executes with no additional output.

Learn More

- AWS Config Concepts (p. 2)
- Authorizing Aggregator Accounts to Collect AWS Config Data Using the AWS Command Line Interface (p. 177)
- Viewing Compliance Data in the Aggregated View (p. 168)
- Troubleshooting for Multi-Account Multi-Region Data Aggregation (p. 178)

Authorizing Aggregator Accounts to Collect AWS Config Data Using the Console

AWS Config allows you to authorize aggregator accounts to collect AWS Config data.

This flow is not required if you are aggregating source accounts that are part of AWS Organizations.

On the **Authorizations** page, you can do the following:

- Add Authorization to allow an aggregator account and region to collect AWS Config data.
- Authorize a pending request from an aggregator account to collect AWS Config data.
- Delete an authorization for an aggregator account.

Topics

Add Authorization for Aggregator Accounts and Regions

You can add authorization to grant permission to aggregator accounts and regions to collect AWS Config data.

1. Sign in to the AWS Management Console and open the AWS Config console at https://console.aws.amazon.com/config/.
2. Navigate to the **Authorizations** page and choose **Add authorization**.
3. For **Aggregator account**, type the 12-digit account ID of an aggregator account.

4. For **Aggregator region**, choose the AWS regions where aggregator account is allowed to collect AWS Config data.
5. Choose **Add authorization** to confirm your selection.

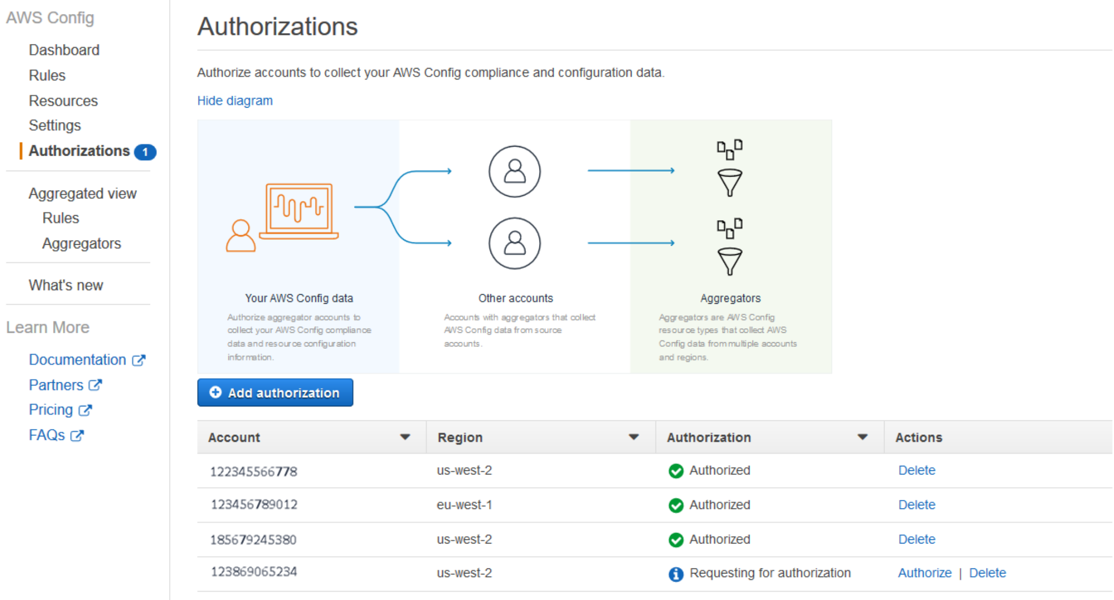
   AWS Config displays an aggregator account, region, and authorization status.

   > **Note**
   > You can also add authorization to aggregator accounts and regions programatically using AWS CloudFormation sample template. For more information, see AWS::Config::AggregationAuthorization in the *AWS CloudFormation user guide*.

Authorize a Pending Request for an Aggregator Account

If you have a pending authorization request from an exisiting aggregator account you will see the request status on the **Authorizations** page. You can authorize a pending request from this page.

1. For the aggregator account you want to authorize, choose **Authorize** in the Actions column.



Authorizations

Authorize accounts to collect your AWS Config compliance and configuration data.

Your AWS Config data: Authorize aggregator accounts to collect your AWS Config compliance data and resource configuration information.

Other accounts: Accounts with aggregators that collect AWS Config data from source accounts.

Aggregators: Aggregators are AWS Config resource types that collect AWS Config data from multiple accounts and regions.

Account	Region	Authorization	Actions
122345566778	us-west-2	✓ Authorized	Delete
123456789012	eu-west-1	✓ Authorized	Delete
185679245380	us-west-2	✓ Authorized	Delete
123869065234	us-west-2	ℹ Requesting for authorization	Authorize | Delete

   A confirmation message is displayed to confirm you grant permission to an aggregator account and region for collecting AWS Config data.

2. Choose **Authorize** to grant this permission for an aggregator account and region.

   The authorization status changes from **Requesting for authorization** to **Authorized**.

Delete Authorization for an Exisiting Aggregator Account

1. For the aggregator account you want to delete authorization, choose **Delete** in the Actions column.

   A warning message is displayed. When you delete this authorization, AWS Config data is not shared with an aggregator account.

   > **Note**
   > After authorization for an aggregator is deleted the data will remain in the aggregator account for up to 24 hours before being deleted.

2. Choose **Delete** to confirm your selection.

The aggregator account is deleted.

Learn More

- AWS Config Concepts (p. 2)
- Setting Up an Aggregator Using the Console (p. 169)
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Authorizing Aggregator Accounts to Collect AWS Config Data Using the AWS Command Line Interface

You can authorize aggregator accounts to collect AWS Config data from source accounts and delete aggregator accounts using the AWS Command Line Interface (AWS CLI). To use the AWS Management Console, see Authorizing Aggregator Accounts to Collect AWS Config Data Using the Console (p. 175).

The AWS CLI is a unified tool to manage your AWS services. With just one tool to download and configure, you can control multiple AWS services from the command line and use scripts to automate them.

To install the AWS CLI on your local machine, see Installing the AWS CLI in the *AWS CLI User Guide*.

If necessary, type `aws configure` to configure the AWS CLI to use an AWS Region where AWS Config aggregators are available.

Topics

Add Authorization for Aggregator Accounts and Regions

1. Open a command prompt or a terminal window.
2. Type the following command:

```
aws configservice put-aggregation-authorization --authorized-account-id  AccountID --
authorized-aws-region Region
```

3. Press Enter.

   You should see output similar to the following:

```

{
    "AggregationAuthorization": {
        "AuthorizedAccountId": "AccountID",
        "AggregationAuthorizationArn": "arn:aws:config:Region:AccountID:aggregation-
authorization/AccountID/Region",
        "CreationTime": 1518116709.993,
        "AuthorizedAwsRegion": "Region"
    }
}
```

Delete an Authorization Account

To delete an authorized account using the AWS CLI

- Type the following command:

```
aws configservice delete-aggregation-authorization --authorized-account-id  AccountID
 --authorized-aws-region Region
```

  If successful, the command executes with no additional output.

Learn More

- AWS Config Concepts (p. 2)
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- Viewing Compliance Data in the Aggregated View (p. 168)
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Troubleshooting for Multi-Account Multi-Region Data Aggregation

AWS Config might not aggregate data from source accounts for one of the following reasons:

If this happens	Do this
AWS Config is not enabled in the source account.	Enable AWS Config in the source account and authorize the aggregator account to collect data.
Authorization is not granted to an aggregator account.	Sign in to the source account and grant authorization to the aggregator account to collect AWS Config data.
There might be a temporary issue that is preventing data aggregation.	Data aggregation is subject to delays. Wait for a few minutes.

AWS Config might not aggregate data from an organization for one of the following reasons:

If this happens	Do this
AWS Config is unable to access your organization details due to invalid IAM role.	Create an IAM role or select a valid IAM role from the IAM role list. **Note** If the IAM role is invalid for more than 24 hours, AWS Config deletes data for entire organization.
AWS Config service access is disabled in your organization.	You can enable integration between AWS Config and AWS Organizations through the `EnableAWSServiceAccess` API. If you choose **Add my organization** in console, AWS Config automatically enables the integration between AWS Config and AWS Organizations.

If this happens	Do this
AWS Config is unable to access your organization details because all features is not enabled in your organization.	Enable all features in AWS Organizations console.

Learn More

- AWS Config Concepts (p. 2)
- Setting Up an Aggregator Using the Console (p. 169)
- Authorizing Aggregator Accounts to Collect AWS Config Data Using the Console (p. 175)
- Viewing Compliance Data in the Aggregated View (p. 168)

Monitoring

You can use other AWS services to monitor AWS Config resources.

- You can use Amazon Simple Notification Service (SNS) to send you notifications every time a supported AWS resource is created, updated, or otherwise modified as a result of user API activity.
- You can use Amazon CloudWatch Events to detect and react to changes in the status of AWS Config events.

Topics

Monitoring AWS Resource Changes with Amazon SQS

AWS Config uses Amazon Simple Notification Service (SNS) to send you notifications every time a supported AWS resource is created, updated, or otherwise modified as a result of user API activity. However, you might be interested in only certain resource configuration changes. For example, you might consider it critical to know when someone modifies the configuration of a security group, but not need to know every time there is a change to tags on your Amazon EC2 instances. Or, you might want to write a program that performs specific actions when specific resources are updated. For example, you might want to start a certain workflow when a security group configuration is changed. If you want to programmatically consume the data from AWS Config in these or other ways, use an Amazon Simple Queue Service queue as the notification endpoint for Amazon SNS.

> **Note**
>
> Notifications can also come from Amazon SNS in the form of an email, a Short Message Service (SMS) message to SMS-enabled mobile phones and smartphones, a notification message to an application on a mobile device, or a notification message to one or more HTTP or HTTPS endpoints.

You can have a single SQS queue subscribe to multiple topics, whether you have one topic per region or one topic per account per region. You must subscribe the queue to your desired SNS topic. (You can subscribe multiple queues to one SNS topic.) For more information, see Sending Amazon SNS Messages to Amazon SQS Queues.

Permissions for Amazon SQS

To use Amazon SQS with AWS Config, you must configure a policy that grants permissions to your account to perform all actions that are allowed on an SQS queue. The following example policy grants the account number 111122223333 and account number 444455556666 permission to send messages pertaining to each configuration change to the queue named arn:aws:sqs:us-east-2:444455556666:queue1.

```
{
  "Version": "2012-10-17",
  "Id": "Queue1_Policy_UUID",
  "Statement":
    {
       "Sid":"Queue1_SendMessage",
       "Effect": "Allow",
       "Principal": {
            "AWS": ["111122223333","444455556666"]
         },
        "Action": "sqs:SendMessage",
        "Resource": "arn:aws:sqs:us-east-2:444455556666:queue1"
     }
}
```

You must also create a policy that grants permissions for connections between an SNS topic and the SQS queue that subscribes to that topic. The following is an example policy that permits the SNS topic with the Amazon Resource Name (ARN) arn:aws:sns:us-east-2:111122223333:test-topic to perform any actions on the queue named arn:aws:sqs:us-east-2:111122223333:test-topic-queue.

> **Note**
> The account for the SNS topic and the SQS queue must be in the same region.

```
{
  "Version": "2012-10-17",
  "Id": "SNStoSQS",
  "Statement":
     {
        "Sid":"rule1",
        "Effect": "Allow",
        "Principal": "*",
        "Action": "sqs:*",
        "Resource": "arn:aws:sqs:us-east-2:111122223333:test-topic-queue",
        "Condition" : {
            "StringEquals" : {
            "aws:SourceArn":"arn:aws:sns:us-east-2:111122223333:test-topic"
            }
        }
     }
}
```

Each policy can include statements that cover only a single queue, not multiple queues. For information about other restrictions on Amazon SQS policies, see Special Information for Amazon SQS Policies.

Monitoring AWS Config with Amazon CloudWatch Events

Amazon CloudWatch Events delivers a near real-time stream of system events that describe changes in AWS resources. Use Amazon CloudWatch Events to detect and react to changes in the status of AWS Config events.

You can create a rule that runs whenever there is a state transition, or when there is a transition to one or more states that are of interest. Then, based on rules you create, Amazon CloudWatch Events invokes one or more target actions when an event matches the values you specify in a rule. Depending on the type of event, you might want to send notifications, capture event information, take corrective action, initiate events, or take other actions.

Before you create event rules for AWS Config, however, you should do the following:

- Familiarize yourself with events, rules, and targets in CloudWatch Events. For more information, see What Is Amazon CloudWatch Events?

- For more information about how to get started with CloudWatch Events and set up rules, see Getting Started with CloudWatch Events.
- Create the target or targets you will use in your event rules.

Topics

Amazon CloudWatch Events format for AWS Config

The CloudWatch event for AWS Config has the following format:

```
{
 "version":"0",
  "id":" cd4d811e-ab12-322b-8255-872ce65b1bc8",
   "detail-type":"event type",
   "source":"aws.config",
   "account":"111122223333",
   "time":"2018-03-22T00:38:11Z",
   "region":"us-east-1",
   "resources":[resources],
   "detail":{specific message type
  }
```

Creating Amazon CloudWatch Events Rule for AWS Config

Use the following steps to create a CloudWatch Events rule that triggers on an event emitted by AWS Config.

1. Open the CloudWatch console at https://console.aws.amazon.com/cloudwatch/.
2. In the navigation pane, choose **Events**.
3. Choose **Create rule**.
4. On the **Step 1: Create rule** page, for **Service Name**, choose **Config**.
5. For **Event Type**, choose the event type that triggers the rule:
   - Choose **All Events** to make a rule that applies to all AWS services. If you choose this option, you cannot choose specific message types, rule names, resource types, or resource IDs.
   - Choose **AWS API Call via CloudTrail** to base rules on API calls made to this service. For more information about creating this type of rule, see Creating a CloudWatch Events Rule That Is Triggered on an AWS API Call Using AWS CloudTrail.
   - Choose **Config Configuration Item Change** to get notifications when a resource in your account changes.
   - Choose **Config Rules Compliance Change** to get notifications when a compliance check to your rules fails.
   - Choose **Config Rules Re-evaluation Status** to get reevaluation status notifications.
   - Choose **Config Configuration Snapshot Delivery Status** to get configuration snapshot delivery status notifications.
   - Choose **Config Configuration History Delivery Status** to get configuration history delivery status notifications.

6. Choose **Any message type** to receive notifications of any type. Choose **Specific message type(s)** to receive the following types of notifications:
    - If you choose **ConfigurationItemChangeNotification**, you receive messages when AWS Config successfully delivers the configuration snapshot to your Amazon S3 bucket.
    - If you choose **ComplianceChangeNotification**, you receive messages when the compliance type of a resource that AWS Config evaluates has changed.
    - If you choose **ConfigRulesEvaluationStarted**, you receive messages when AWS Config starts evaluating your rule against the specified resources.
    - If you choose **ConfigurationSnapshotDeliveryCompleted**, you receive messages when AWS Config successfully delivers the configuration snapshot to your Amazon S3 bucket.
    - If you choose **ConfigurationSnapshotDeliveryFailed**, you receive messages when AWS Config fails to deliver the configuration snapshot to your Amazon S3 bucket.
    - If you choose **ConfigurationSnapshotDeliveryStarted**, you receive messages when AWS Config starts delivering the configuration snapshot to your Amazon S3 bucket.
    - If you choose **ConfigurationHistoryDeliveryCompleted**, you receive messages when AWS Config successfully delivers the configuration history to your Amazon S3 bucket.
7. If you chose a specific event type from the **Event Type** drop-down list, choose **Any resource type** to make a rule that applies to all AWS Config supported resource types.

   Or choose **Specific resource type(s)**, and then type the AWS Config supported resource type (for example, `AWS::EC2::Instance`).
8. If you chose a specific event type from the **Event Type** drop-down list, choose **Any resource ID** to include any AWS Config supported resource ID.

   Or choose **Specific resource ID(s)**, and then type the AWS Config supported resource ID (for example, `i-04606de676e635647`).
9. If you chose a specific event type from the **Event Type** drop-down list, choose **Any rule name** to include any AWS Config supported rule.

   Or choose **Specific rule name(s)**, and then type the AWS Config supported rule (for example, **required-tags**).
10. Review your rule setup to make sure it meets your event-monitoring requirements.
11. In the **Targets** area, choose Add target*.
12. In the **Select target type** list, choose the type of target you have prepared to use with this rule, and then configure any additional options required by that type.
13. Choose **Configure details**.
14. On the **Configure rule details** page, type a name and description for the rule, and then choose the **State** box to enable the rule as soon as it is created.
15. Choose **Create rule** to confirm your selection.

Using Service-Linked Roles for AWS Config

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

A service-linked role makes setting up AWS Config easier because you don't have to manually add the necessary permissions. AWS Config defines the permissions of its service-linked roles, and unless defined otherwise, only AWS Config can assume its roles. The defined permissions include the trust policy and the permissions policy, and that permissions policy cannot be attached to any other IAM entity.

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

Service-Linked Role Permissions for AWS Config

AWS Config uses the service-linked role named **AWSServiceRoleForConfig** – AWS Config uses this service-linked role to call other AWS services on your behalf.

The **AWSServiceRoleForConfig** service-linked role trusts the `config.amazonaws.com` service to assume the role.

The permissions policy for the `AWSServiceRoleForConfig` role contains read-only and write-only permissions on the AWS Config resources and read-only permissions for resources in other services that AWS Config supports. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9).

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

To use a service-linked role with AWS Config, you must configure permissions on your Amazon S3 bucket and Amazon SNS topic. For more information, see Required Permissions for the Amazon S3 Bucket When Using Service-Linked Roles (p. 90) and Required Permissions for the Amazon SNS Topic When Using Service-Linked Roles (p. 92).

Creating a Service-Linked Role for AWS Config

In the IAM CLI or the IAM API, create a service-linked role with the `config.amazonaws.com` service name. For more information, see Creating a Service-Linked Role in the *IAM User Guide*. If you delete this service-linked role, you can use this same process to create the role again.

Editing a Service-Linked Role for AWS Config

AWS Config does not allow you to edit the **AWSServiceRoleForConfig** service-linked role. After you create a service-linked role, you cannot change the name of the role because various entities might reference the role. However, you can edit the description of the role using IAM. For more information, see Editing a Service-Linked Role in the *IAM User Guide*.

Deleting a Service-Linked Role for AWS Config

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

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

To delete AWS Config resources used by the AWSServiceRoleForConfig

Ensure that you do not have `ConfigurationRecorders` using the service-linked role. You can use the AWS Config console to stop the configuration recorder. To stop recording, under **Recording is on**, choose **Turn off**.

You can delete the `ConfigurationRecorder` using AWS Config API. To delete, use the `delete-configuration-recorder` command.

```
        $ aws configservice delete-configuration-recorder --configuration-recorder-
name default
```

To manually delete the service-linked role using IAM

Use the IAM console, the IAM CLI, or the IAM API to delete the AWSServiceRoleForConfig service-linked role. For more information, see Deleting a Service-Linked Role in the *IAM User Guide*.

Using AWS Config with Interface VPC Endpoints

If you use Amazon Virtual Private Cloud (Amazon VPC) to host your AWS resources, you can establish a private connection between your VPC and AWS Config. You can use this connection to communicate with AWS Config from your VPC without going through the public internet.

Amazon VPC is an AWS service that you can use to launch AWS resources in a virtual network that you define. With a VPC, you have control over your network settings, such the IP address range, subnets, route tables, and network gateways. Interface VPC endpoints are powered by AWS PrivateLink, an AWS technology that enables private communication between AWS services using an elastic network interface with private IP addresses. To connect your VPC to AWS Config, you define an *interface VPC endpoint* for AWS Config. This type of endpoint enables you to connect your VPC to AWS services. The endpoint provides reliable, scalable connectivity to AWS Config without requiring an internet gateway, network address translation (NAT) instance, or VPN connection. For more information, see What is Amazon VPC in the *Amazon VPC User Guide*.

The following steps are for users of Amazon VPC. For more information, see Getting Started in the *Amazon VPC User Guide*.

Availability

AWS Config currently supports VPC endpoints in the following regions:

- US East (Ohio)
- US East (N. Virginia)
- US West (N. California)
- US West (Oregon)
- Asia Pacific (Mumbai)
- Asia Pacific (Seoul)
- Asia Pacific (Singapore)
- Asia Pacific (Sydney)
- Asia Pacific (Tokyo)
- Canada (Central)
- EU (Frankfurt)
- EU (Ireland)
- EU (London)
- EU (Paris)
- South America (São Paulo)

Create a VPC Endpoint for AWS Config

To start using AWS Config with your VPC, create an interface VPC endpoint for AWS Config. You do not need to change the settings for AWS Config. AWS Config calls other AWS services using their public endpoints. For more information, see Creating an Interface Endpoint in the *Amazon VPC User Guide*.

Logging AWS Config API Calls with AWS CloudTrail

AWS Config is integrated with AWS CloudTrail, a service that provides a record of actions taken by a user, role, or an AWS service in AWS Config. CloudTrail captures all API calls for AWS Config as events. The calls captured include calls from the AWS Config console and code calls to the AWS Config API operations. If you create a trail, you can enable continuous delivery of CloudTrail events to an Amazon S3 bucket, including events for AWS Config. 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 AWS Config, the IP address from which the request was made, who made the request, when it was made, and additional details.

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

AWS Config Information in CloudTrail

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

- Overview for Creating a Trail
- CloudTrail Supported Services and Integrations
- Configuring Amazon SNS Notifications for CloudTrail
- Receiving CloudTrail Log Files from Multiple Regions and Receiving CloudTrail Log Files from Multiple Accounts

All AWS Config operations are logged by CloudTrail and are documented in the AWS Config API Reference. For example, calls to the DeliverConfigSnapshot, DeleteDeliveryChannel, and DescribeDeliveryChannels operations generate entries in the CloudTrail log files.

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

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

For more information, see the CloudTrail userIdentity Element.

Understanding AWS Config Log File Entries

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

Example Log Files

For examples of the CloudTrail log entries, see the following topics.

Contents

DeleteDeliveryChannel

The following is an example CloudTrail log file for the DeleteDeliveryChannel operation.

```
{
   "eventVersion": "1.02",
   "userIdentity": {
    "type": "IAMUser",
    "principalId": "AIDACKCEVSQ6C2EXAMPLE",
    "arn": "arn:aws:iam::222222222222:user/JohnDoe",
    "accountId": "222222222222",
    "accessKeyId": "AKIAIOSFODNN7EXAMPLE",
    "userName": "JohnDoe"
   },
   "eventTime": "2014-12-11T18:32:57Z",
   "eventSource": "config.amazonaws.com",
   "eventName": "DeleteDeliveryChannel",
   "awsRegion": "us-west-2",
   "sourceIPAddress": "10.24.34.0",
   "userAgent": "aws-internal/3",
   "requestParameters": {
    "deliveryChannelName": "default"
   },
   "responseElements": null,
   "requestID": "207d695a-8164-11e4-ab4f-657c7ab282ab",
   "eventID": "5dcff7a9-e414-411a-a43e-88d122a0ad4a",
   "eventType": "AwsApiCall",
   "recipientAccountId": "222222222222"
  }
```

DeliverConfigSnapshot

The following is an example CloudTrail log file for the DeliverConfigSnapshot operation.

```
{
      "eventVersion": "1.02",
      "userIdentity": {
        "type": "AssumedRole",
        "principalId": "AIDAABCDEFGHIJKLNMOPQ:Config-API-Test",
        "arn": "arn:aws:sts::111111111111:assumed-role/JaneDoe/Config-API-Test",
        "accountId": "111111111111",
        "accessKeyId": "AKIAIOSFODNN7EXAMPLE",
        "sessionContext": {
          "attributes": {
            "mfaAuthenticated": "false",
            "creationDate": "2014-12-11T00:58:42Z"
          },
          "sessionIssuer": {
            "type": "Role",
            "principalId": "AIDAABCDEFGHIJKLNMOPQ",
            "arn": "arn:aws:iam::111111111111:role/JaneDoe",
            "accountId": "111111111111",
            "userName": "JaneDoe"
          }
        }
      },
      "eventTime": "2014-12-11T00:58:53Z",
      "eventSource": "config.amazonaws.com",
      "eventName": "DeliverConfigSnapshot",
      "awsRegion": "us-west-2",
      "sourceIPAddress": "10.24.34.0",
      "userAgent": "aws-cli/1.2.11 Python/2.7.4 Linux/2.6.18-164.el5",
      "requestParameters": {
        "deliveryChannelName": "default"
      },
      "responseElements": {
        "configSnapshotId": "58d50f10-212d-4fa4-842e-97c614da67ce"
      },
      "requestID": "e0248561-80d0-11e4-9f1c-7739d36a3df2",
      "eventID": "3e88076c-eae1-4aa6-8990-86fe52aedbd8",
      "eventType": "AwsApiCall",
      recipientAccountId": "111111111111"
    }
```

DescribeConfigurationRecorderStatus

The following is an example CloudTrail log file for the DescribeConfigurationRecorderStatus operation.

```
{
      "eventVersion": "1.02",
      "userIdentity": {
        "type": "IAMUser",
        "principalId": "AIDACKCEVSQ6C2EXAMPLE",
        "arn": "arn:aws:iam::222222222222:user/JohnDoe",
        "accountId": "222222222222",
        "accessKeyId": "AKIAI44QH8DHBEXAMPLE",
        "userName": "JohnDoe"
      },
      "eventTime": "2014-12-11T18:35:44Z",
      "eventSource": "config.amazonaws.com",
      "eventName": "DescribeConfigurationRecorderStatus",
      "awsRegion": "us-west-2",
      "sourceIPAddress": "192.0.2.0",
      "userAgent": "aws-cli/1.2.11 Python/2.7.4 Linux/2.6.18-164.el5",
      "requestParameters": null,
      "responseElements": null,
      "requestID": "8442f25d-8164-11e4-ab4f-657c7ab282ab",
      "eventID": "a675b36b-455f-4e18-a4bc-d3e01749d3f1",
      "eventType": "AwsApiCall",
      "recipientAccountId": "222222222222"
    }
```

DescribeConfigurationRecorders

The following is an example CloudTrail log file for the DescribeConfigurationRecorders operation.

```
{
      "eventVersion": "1.02",
      "userIdentity": {
        "type": "IAMUser",
        "principalId": "AIDACKCEVSQ6C2EXAMPLE",
        "arn": "arn:aws:iam::222222222222:user/JohnDoe",
        "accountId": "222222222222",
        "accessKeyId": "AKIAI44QH8DHBEXAMPLE",
        "userName": "JohnDoe"
      },
      "eventTime": "2014-12-11T18:34:52Z",
      "eventSource": "config.amazonaws.com",
      "eventName": "DescribeConfigurationRecorders",
      "awsRegion": "us-west-2",
      "sourceIPAddress": "192.0.2.0",
      "userAgent": "aws-cli/1.2.11 Python/2.7.4 Linux/2.6.18-164.el5",
      "requestParameters": null,
      "responseElements": null,
      "requestID": "6566b55c-8164-11e4-ab4f-657c7ab282ab",
      "eventID": "6259a9ad-889e-423b-beeb-6e1eec84a8b5",
      "eventType": "AwsApiCall",
      "recipientAccountId": "222222222222"
    }
```

DescribeDeliveryChannels

Following is an example CloudTrail log file for the DescribeDeliveryChannels operation.

```
{
      "eventVersion": "1.02",
      "userIdentity": {
        "type": "IAMUser",
        "principalId": "AIDACKCEVSQ6C2EXAMPLE",
        "arn": "arn:aws:iam::222222222222:user/JohnDoe",
        "accountId": "222222222222",
        "accessKeyId": "AKIAI44QH8DHBEXAMPLE",
        "userName": "JohnDoe"
      },
      "eventTime": "2014-12-11T18:35:02Z",
      "eventSource": "config.amazonaws.com",
      "eventName": "DescribeDeliveryChannels",
      "awsRegion": "us-west-2",
      "sourceIPAddress": "192.0.2.0",
      "userAgent": "aws-cli/1.2.11 Python/2.7.4 Linux/2.6.18-164.el5",
      "requestParameters": null,
      "responseElements": null,
      "requestID": "6b6aee3f-8164-11e4-ab4f-657c7ab282ab",
      "eventID": "3e15ebc5-bf39-4d2a-8b64-9392807985f1",
      "eventType": "AwsApiCall",
      "recipientAccountId": "222222222222"
    }
```

GetResourceConfigHistory

The following is an example CloudTrail log file for the GetResourceConfigHistory operation.

```
{
      "eventVersion": "1.02",
      "userIdentity": {
        "type": "AssumedRole",
        "principalId": "AIDAABCDEFGHIJKLNMOPQ:Config-API-Test",
        "arn": "arn:aws:sts::111111111111:assumed-role/JaneDoe/Config-API-Test",
        "accountId": "111111111111",
        "accessKeyId": "AKIAIOSFODNN7EXAMPLE",
        "sessionContext": {
          "attributes": {
            "mfaAuthenticated": "false",
            "creationDate": "2014-12-11T00:58:42Z"
          },
          "sessionIssuer": {
            "type": "Role",
            "principalId": "AIDAABCDEFGHIJKLNMOPQ",
            "arn": "arn:aws:iam::111111111111:role/JaneDoe",
            "accountId": "111111111111",
            "userName": "JaneDoe"
          }
        }
      },
      "eventTime": "2014-12-11T00:58:42Z",
      "eventSource": "config.amazonaws.com",
      "eventName": "GetResourceConfigHistory",
      "awsRegion": "us-west-2",
      "sourceIPAddress": "10.24.34.0",
      "userAgent": "aws-cli/1.2.11 Python/2.7.4 Linux/2.6.18-164.el5",
      "requestParameters": {
        "resourceId": "vpc-a12bc345",
        "resourceType": "AWS::EC2::VPC",
        "limit": 0,
        "laterTime": "Dec 11, 2014 12:58:42 AM",
        "earlierTime": "Dec 10, 2014 4:58:42 PM"
      },
      "responseElements": null,
      "requestID": "d9f3490d-80d0-11e4-9f1c-7739d36a3df2",
      "eventID": "ba9c1766-d28f-40e3-b4c6-3ffb87dd6166",
      "eventType": "AwsApiCall",
      "recipientAccountId": "111111111111"
      }
```

PutConfigurationRecorder

The following is an example CloudTrail log file for the PutConfigurationRecorder operation.

```
{
      "eventVersion": "1.02",
      "userIdentity": {
        "type": "IAMUser",
        "principalId": "AIDACKCEVSQ6C2EXAMPLE",
        "arn": "arn:aws:iam::222222222222:user/JohnDoe",
        "accountId": "222222222222",
        "accessKeyId": "AKIAI44QH8DHBEXAMPLE",
        "userName": "JohnDoe"
      },
      "eventTime": "2014-12-11T18:35:23Z",
      "eventSource": "config.amazonaws.com",
      "eventName": "PutConfigurationRecorder",
      "awsRegion": "us-west-2",
      "sourceIPAddress": "192.0.2.0",
      "userAgent": "aws-cli/1.2.11 Python/2.7.4 Linux/2.6.18-164.el5",
      "requestParameters": {
        "configurationRecorder": {
          "name": "default",
          "roleARN": "arn:aws:iam::222222222222:role/config-role-pdx"
        }
      },
      "responseElements": null,
      "requestID": "779f7917-8164-11e4-ab4f-657c7ab282ab",
      "eventID": "c91f3daa-96e8-44ee-8ddd-146ac06565a7",
      "eventType": "AwsApiCall",
      "recipientAccountId": "222222222222"
    }
```

PutDeliveryChannel

The following is an example CloudTrail log file for the PutDeliveryChannel operation.

```
{
      "eventVersion": "1.02",
      "userIdentity": {
        "type": "IAMUser",
        "principalId": "AIDACKCEVSQ6C2EXAMPLE",
        "arn": "arn:aws:iam::222222222222:user/JohnDoe",
        "accountId": "222222222222",
        "accessKeyId": "AKIAI44QH8DHBEXAMPLE",
        "userName": "JohnDoe"
      },
      "eventTime": "2014-12-11T18:33:08Z",
      "eventSource": "config.amazonaws.com",
      "eventName": "PutDeliveryChannel",
      "awsRegion": "us-west-2",
      "sourceIPAddress": "192.0.2.0",
      "userAgent": "aws-cli/1.2.11 Python/2.7.4 Linux/2.6.18-164.el5",
      "requestParameters": {
        "deliveryChannel": {
          "name": "default",
          "s3BucketName": "config-api-test-pdx",
          "snsTopicARN": "arn:aws:sns:us-west-2:222222222222:config-api-test-pdx"
        }
      },
      "responseElements": null,
      "requestID": "268b8d4d-8164-11e4-ab4f-657c7ab282ab",
      "eventID": "b2db05f1-1c73-4e52-b238-db69c04e8dd4",
      "eventType": "AwsApiCall",
      "recipientAccountId": "222222222222"
    }
```

StartConfigurationRecorder

The following is an example CloudTrail log file for the StartConfigurationRecorder operation.

```
{
      "eventVersion": "1.02",
      "userIdentity": {
        "type": "IAMUser",
        "principalId": "AIDACKCEVSQ6C2EXAMPLE",
        "arn": "arn:aws:iam::222222222222:user/JohnDoe",
        "accountId": "222222222222",
        "accessKeyId": "AKIAI44QH8DHBEXAMPLE",
        "userName": "JohnDoe"
      },
      "eventTime": "2014-12-11T18:35:34Z",
      "eventSource": "config.amazonaws.com",
      "eventName": "StartConfigurationRecorder",
      "awsRegion": "us-west-2",
      "sourceIPAddress": "192.0.2.0",
      "userAgent": "aws-cli/1.2.11 Python/2.7.4 Linux/2.6.18-164.el5",
      "requestParameters": {
        "configurationRecorderName": "default"
      },
      "responseElements": null,
      "requestID": "7e03fa6a-8164-11e4-ab4f-657c7ab282ab",
      "eventID": "55a5507f-f306-4896-afe3-196dc078a88d",
      "eventType": "AwsApiCall",
      "recipientAccountId": "222222222222"
    }
```

StopConfigurationRecorder

The following is an example CloudTrail log file for the StopConfigurationRecorder operation.

```
{
      "eventVersion": "1.02",
      "userIdentity": {
        "type": "IAMUser",
        "principalId": "AIDACKCEVSQ6C2EXAMPLE",
        "arn": "arn:aws:iam::222222222222:user/JohnDoe",
        "accountId": "222222222222",
        "accessKeyId": "AKIAI44QH8DHBEXAMPLE",
        "userName": "JohnDoe"
      },
      "eventTime": "2014-12-11T18:35:13Z",
      "eventSource": "config.amazonaws.com",
      "eventName": "StopConfigurationRecorder",
      "awsRegion": "us-west-2",
      "sourceIPAddress": "192.0.2.0",
      "userAgent": "aws-cli/1.2.11 Python/2.7.4 Linux/2.6.18-164.el5",
      "requestParameters": {
        "configurationRecorderName": "default"
      },
      "responseElements": null,
      "requestID": "716deea3-8164-11e4-ab4f-657c7ab282ab",
      "eventID": "6225a85d-1e49-41e9-bf43-3cfc5549e560",
      "eventType": "AwsApiCall",
      "recipientAccountId": "222222222222"
    }
```

AWS Config Resources

The following related resources can help you as you work with this service.

- **AWS Config** – The primary web page for information about AWS Config.
- **AWS Config Pricing**
- **Technical FAQ**
- **Partners** – Links to partner products that are fully integrated with AWS Config to help you visualize, monitor, and manage the data from your configuration stream, configuration snapshots, or configuration history.

- **Classes & Workshops** – Links to role-based and specialty courses as well as self-paced labs to help sharpen your AWS skills and gain practical experience.
- **AWS Developer Tools** – Links to developer tools, SDKs, IDE toolkits, and command line tools for developing and managing AWS applications.
- **AWS Whitepapers** – Links to a comprehensive list of technical AWS whitepapers, covering topics such as architecture, security, and economics and authored by AWS Solutions Architects or other technical experts.
- **AWS Support Center** – The hub for creating and managing your AWS Support cases. Also includes links to other helpful resources, such as forums, technical FAQs, service health status, and AWS Trusted Advisor.
- **AWS Support** – The primary web page for information about AWS Support, a one-on-one, fast-response support channel to help you build and run applications in the cloud.
- **Contact Us** – A central contact point for inquiries concerning AWS billing, account, events, abuse, and other issues.
- **AWS Site Terms** – Detailed information about our copyright and trademark; your account, license, and site access; and other topics.

AWS Software Development Kits for AWS Config

An AWS software development kit (SDK) makes it easier to build applications that access cost-effective, scalable, and reliable AWS infrastructure services. With AWS SDKs, you can get started in minutes with a single, downloadable package that includes the library, code samples, and reference documentation. The following table lists the available SDKs and third-party libraries you can use to access AWS Config programmatically.

Type of Access	Description
AWS SDKs	AWS provides the following SDKs: • AWS SDK for C++ Documentation • AWS Mobile SDK for iOS Documentation • AWS SDK for Go Documentation • AWS SDK for Java Documentation • AWS SDK for JavaScript Documentation • AWS SDK for .NET Documentation • AWS SDK for PHP Documentation

Type of Access	Description
	• AWS SDK for Python (Boto) Documentation • AWS SDK for Ruby Documentation
Third-party libraries	Developers in the AWS developer community also provide their own libraries, which you can find at the following AWS developer centers: • AWS Java Developer Center • AWS JavaScript Developer Center • AWS PHP Developer Center • AWS Python Developer Center • AWS Ruby Developer Center • AWS Windows and .NET Developer Center

Document History

The following table describes the documentation release history of AWS Config.

- **API version**: 2014-11-12
- **Latest documentation update**: November 12, 2018

Feature	Description	Release Date
AWS Config supports new managed rules	This release supports the following new managed rules: • access-keys-rotated (p. 101) • cloud-trail-cloud-watch-logs-enabled (p. 104) • cloud-trail-encryption-enabled (p. 105) • cloud-trail-log-file-validation-enabled (p. 105) • cmk-backing-key-rotation-enabled (p. 108) • iam-policy-no-statements-with-admin-access (p. 125) • iam-role-managed-policy-check (p. 125) • iam-root-access-key-check (p. 126) • iam-user-unused-credentials-check (p. 127) • mfa-enabled-for-iam-console-access (p. 129) • multi-region-cloud-trail-enabled (p. 129) • root-account-hardware-mfa-enabled (p. 135) • vpc-flow-logs-enabled (p. 143) For more information, see List of AWS Config Managed Rules (p. 98).	November 12, 2018
AWS Config supports new managed rules	This release supports the following new managed rules: • dynamodb-table-encryption-enabled (p. 112) • elb-logging-enabled (p. 120) • rds-instance-public-access-check (p. 130) • vpc-default-security-group-closed (p. 143)	October 24, 2018

Feature	Description	Release Date
	For more information, see List of AWS Config Managed Rules (p. 98).	
Compliance history support	With this release, AWS Config now supports storing compliance history of resources as evaluated by AWS Config Rules. For more information, see Viewing Compliance History for Resources as Evaluated by AWS Config Rules (p. 39).	October 18, 2018
Multi-Account Multi-Region Data Aggregation region support	With this release, Multi-Account Multi-Region Data Aggregation is now supported in six new regions. For more information, see Multi-Account Multi-Region Data Aggregation (p. 166).	October 4, 2018
AWS Config supports resource-level permissions for AWS Config Rules APIs actions	With this release, AWS Config supports resource-level permissions for certain AWS Config Rules API actions. For more information about the supported APIs, see Supported Resource-Level Permissions for AWS Config Rules APIs Actions (p. 85).	October 1, 2018
AWS Config supports AWS CodePipeline resource type	With this release, you can use AWS Config to record configuration changes to the AWS CodePipeline resource type. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9).	September 12, 2018
AWS Config supports new managed rules	This release supports the following new managed rules: • ec2-instance-managed-by-ssm (p. 114) • ec2-managedinstance-association-compliance-status-check (p. 116) • ec2-managedinstance-patch-compliance-status-check (p. 117) • guardduty-enabled-centralized (p. 123) • rds-snapshots-public-prohibited (p. 131) • s3-blacklisted-actions-prohibited (p. 136) • s3-bucket-policy-not-more-permissive (p. 136) For more information, see List of AWS Config Managed Rules (p. 98).	September 5, 2018

Feature	Description	Release Date
AWS Config supports AWS Systems Manager resource type	With this release, you can use AWS Config to record configuration changes to the AWS Systems Manager patch compliance and association compliance resource types. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9).	August 9, 2018
AWS Config allows you to delete your AWS Config data using AWS Management Console	With this release, AWS Config introduces support for retention period using AWS Management Console. In the AWS Management Console, you can select a custom data retention period for your `ConfigurationItems` . For more information, see Deleting AWS Config Data (p. 60).	August 7, 2018
AWS Config supports AWS Shield resource type	With this release, you can use AWS Config to record configuration changes to the AWS Shield Protection resource type. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9).	August 7, 2018
AWS Config supports AWS PrivateLink	With this release, AWS Config supports AWS PrivateLink, enabling you to route data between your Amazon Virtual Private Cloud (VPC) and AWS Config entirely within the AWS network. For more information, see Using AWS Config with Interface VPC Endpoints (p. 186).	July 31, 2018
AWS Config allows you to delete your AWS Config data	With this release, AWS Config introduces support for retention period. AWS Config allows you to delete your data by specifying a retention period for your `ConfigurationItems` . For more information, see Deleting AWS Config Data (p. 60). With this release, AWS Config adds the following new APIs. For more information, see the *AWS Config API Reference* : • PutRetentionConfiguration • DescribeRetentionConfigurations • DeleteRetentionConfiguration	May 25, 2018

Feature	Description	Release Date
AWS Config supports new managed rules	This release supports the following two new managed rules: • lambda-function-settings-check (p. 128) • s3-bucket-replication-enabled (p. 140) • iam-policy-blacklisted-check (p. 124) For more information, see List of AWS Config Managed Rules (p. 98).	May 10, 2018
AWS Config supports AWS X-Ray resource type	With this release, you can use AWS Config to record configuration changes to the AWS X-Ray EncryptionConfig resource type. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9).	May 1, 2018
AWS Config supports AWS Lambda resource type and one new managed rule	With this release, you can use AWS Config to record configuration changes to the AWS Lambda function resource type. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9). This release also supports the lambda-function-public-access-prohibited (p. 128) managed rule. For more information, see AWS Config Managed Rules (p. 98).	April 25, 2018
AWS Config supports AWS Elastic Beanstalk resource type	With this release, you can use AWS Config to record configuration changes to the AWS Elastic Beanstalk Application, Application Version, and Environment resources. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9).	April 24, 2018
AWS Config supports new managed rules	This release supports the following two new managed rules: • fms-webacl-resource-policy-check (p. 121) • fms-webacl-rulegroup-association-check (p. 122) For more information, see List of AWS Config Managed Rules (p. 98).	April 4, 2018

Feature	Description	Release Date
Multi-account multi-region data aggregation	With this release, AWS Config introduces multi-account multi-region data aggregation. This feature allows you to aggregate AWS Config data from multiple accounts or an organization and multiple regions into an aggregator account. For more information, see Multi-Account Multi-Region Data Aggregation (p. 166). With this release, AWS Config adds the following new APIs. For more information, see the *AWS Config API Reference* : • PutConfigurationAggregator • DescribePendingAggregationRequests • DeletePendingAggregationRequest • PutAggregationAuthorization • DescribeAggregationAuthorizations • GetAggregateConfigRuleComplianceSummary • DescribeAggregateComplianceByConfigRules • GetAggregateComplianceDetailsByConfigRule • DescribeConfigurationAggregators • DescribeConfigurationAggregatorSourcesStatus • DeleteAggregationAuthorization • DeleteConfigurationAggregator	April 4, 2018
Monitoring AWS Config with Amazon CloudWatch Events	With this release, use Amazon CloudWatch Events to detect and react to changes in the status of AWS Config events. For more information, see Monitoring AWS Config with Amazon CloudWatch Events (p. 181).	March 29, 2018
New API operation	With this release, AWS Config adds support for BatchGetResourceConfig API, allowing you to batch-retrieve the current state of one or more of your resources.	March 20, 2018
AWS Config supports AWS WAF RuleGroup resource type	With this release, you can use AWS Config to record configuration changes to the AWS WAF RuleGroup and AWS WAF RuleGroup Regional resources. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9).	February 15, 2018

Feature	Description	Release Date
AWS Config supports new managed rules	This release supports the following new managed rules: • elb-acm-certificate-required (p. 119) • elb-custom-security-policy-ssl-check (p. 119) • elb-predefined-security-policy-ssl-check (p. 120) • codebuild-project-envvar-awscred-check (p. 109) • codebuild-project-source-repo-url-check (p. 109) • iam-group-has-users-check (p. 123) • s3-bucket-server-side-encryption-enabled (p. 141) For more information, see List of AWS Config Managed Rules (p. 98).	January 25, 2018
AWS Config supports Elastic Load Balancing resource type	With this release, you can use AWS Config to record configuration changes to your Elastic Load Balancing classic load balancers. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9).	November 17, 2017
AWS Config supports the Amazon CloudFront and AWS WAF resource type	With this release, you can use AWS Config to record configuration changes to your CloudFront distribution and streaming distribution. With this release, you can use AWS Config to record configuration changes to the following AWS WAF and AWS WAF Regional resources; rate based rule, rule, and Web ACL. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9).	November 15, 2017
AWS Config supports the AWS CodeBuild resource type	With this release, you can use AWS Config to record configuration changes to your AWS CodeBuild projects. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9).	October 20, 2017

Feature	Description	Release Date
AWS Config supports Auto Scaling resources and one new managed rule	With this release, you can use AWS Config to record configuration changes to the following Auto Scaling resources; groups, launch configuration, scheduled action, and scaling policy. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9). This release also supports the following managed rule: • autoscaling-group-elb-healthcheck-required (p. 103) For more information, see AWS Config Managed Rules (p. 98).	September 18, 2017
AWS Config supports the AWS CodeBuild resource type	With this release, you can use AWS Config to record configuration changes to your AWS CodeBuild projects. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9).	October 20, 2017
AWS Config supports Auto Scaling resources and one new managed rule	With this release, you can use AWS Config to record configuration changes to the following Auto Scaling resources; groups, launch configuration, scheduled action, and scaling policy. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9). This release also supports the following managed rule: • autoscaling-group-elb-healthcheck-required (p. 103) For more information, see AWS Config Managed Rules (p. 98).	September 18, 2017

Feature	Description	Release Date
AWS Config supports the DynamoDB table resource type and one new managed rule	With this release, you can use AWS Config to record configuration changes to your DynamoDB tables. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9). This release supports the following managed rule: • dynamodb-autoscaling-enabled (p. 111) For more information, see AWS Config Managed Rules (p. 98).	September 8, 2017
AWS Config supports two new managed rules for Amazon S3	This release supports two new managed rules: • s3-bucket-public-read-prohibited (p. 139) • s3-bucket-public-write-prohibited (p. 140) For more information, see AWS Config Managed Rules (p. 98).	August 14, 2017
New page in the AWS Config console	You can use the **Dashboard** in the AWS Config console to see the following: • Total number of resources • Total number of rules • Number of noncompliant resources • Number of noncompliant rules For more information, see Viewing the AWS Config Dashboard (p. 28).	July 17, 2017
New API operation	You can use the GetDiscoveredResourceCounts operation to return the number of resource types, the number of each resource type, and the total number of resources that AWS Config is recording in a region for your AWS account.	July 17, 2017

Feature	Description	Release Date
AWS Config supports the AWS CloudFormation stack resource type and one new managed rule	With this release, you can use AWS Config to record configuration changes to your AWS CloudFormation stacks. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9). This release supports the following managed rule: - cloudformation-stack-notification-check (p. 103) For more information, see AWS Config Managed Rules (p. 98).	July 6, 2017
New and updated content	This release adds support for AWS Config Rules in the Canada (Central) Region and South America (São Paulo) Region. For all regions that support AWS Config and Config Rules, see AWS Regions and Endpoints in the *AWS General Reference*.	July 5, 2017
New and updated content	AWS Config Rules is available in the AWS GovCloud (US) Region. For more information, see the AWS GovCloud (US) User Guide. For regions that support AWS Config, see AWS Regions and Endpoints in the *AWS General Reference*.	June 8, 2017

Feature	Description	Release Date
AWS Config supports the Amazon CloudWatch alarm resource type and three new managed rules	With this release, you can use AWS Config to record configuration changes to your Amazon CloudWatch alarms. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9). This release supports three new managed rules: • cloudwatch-alarm-action-check (p. 106) • cloudwatch-alarm-resource-check (p. 107) • cloudwatch-alarm-settings-check (p. 107) For more information, see AWS Config Managed Rules (p. 98).	June 1, 2017
New and updated content	This release supports specifying the application version number for the following managed rules: • ec2-managedinstance-applications-blacklisted (p. 115) • ec2-managedinstance-applications-required (p. 115) For more information, see AWS Config Managed Rules (p. 98).	June 1, 2017
New and updated content	This release adds support for AWS Config Rules in the Asia Pacific (Mumbai) Region. For more information, see AWS Regions and Endpoints in the *AWS General Reference*.	April 27, 2017

Feature	Description	Release Date
New and updated content	This release supports an updated console experience for adding AWS Config managed rules to your account for the first time. When you set up AWS Config Rules for the first time or in a new region, you can search for AWS managed rules by name, description, or label. You can choose **Select all** to select all rules or choose **Clear all** to clear all rules. For more information, see Setting Up AWS Config Rules with the Console (p. 27).	April 5, 2017
AWS Config supports new managed rules	This release supports the following new managed rules: • acm-certificate-expiration-check (p. 101) • ec2-instance-detailed-monitoring-enabled (p. 113) • ec2-managedinstance-inventory-blacklisted (p. 116) • ec2-volume-inuse-check (p. 118) • iam-user-group-membership-check (p. 126) • iam-user-no-policies-check (p. 127) • s3-bucket-ssl-requests-only (p. 141) For more information, see List of AWS Config Managed Rules (p. 98).	February 21, 2017
New and updated content	This release adds support for AWS Config Rules in the EU (London) Region. For more information, see AWS Regions and Endpoints in the *AWS General Reference*.	February 21, 2017
New and updated content	This release adds AWS CloudFormation templates for AWS Config managed rules. You can use the templates to create managed rules for your account. For more information, see Creating AWS Config Managed Rules With AWS CloudFormation Templates (p. 145).	February 16, 2017

Feature	Description	Release Date
New and updated content	This release adds support for a new test mode for the `PutEvaluations` API. Set the `TestMode` parameter to true in your custom rule to verify whether your AWS Lambda function will deliver evaluation results to AWS Config. No updates occur to your existing evaluations, and evaluation results are not sent to AWS Config. For more information, see PutEvaluations in the *AWS Config API Reference*.	February 16, 2017
New and updated content	This release adds support for AWS Config Rules in the Asia Pacific (Seoul), and US West (N. California) Regions. For more information, see AWS Regions and Endpoints in the *AWS General Reference*.	December 21, 2016
New and updated content	This release adds support for AWS Config in the EU (London) Region. For more information, see AWS Regions and Endpoints in the *AWS General Reference*.	December 13, 2016
New and updated content	This release adds support for AWS Config in the Canada (Central) Region. For more information, see AWS Regions and Endpoints in the *AWS General Reference*.	December 8, 2016
AWS Config supports Amazon Redshift resource types and two new managed rules	With this release, you can use AWS Config to record configuration changes to your Amazon Redshift clusters, cluster parameter groups, cluster security groups, cluster snapshots, cluster subnet groups, and event subscriptions. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9). This release supports two new managed rules: • redshift-cluster-configuration-check (p. 132) • redshift-cluster-maintenancesettings-check (p. 132) For more information, see List of AWS Config Managed Rules (p. 98).	December 7, 2016

Feature	Description	Release Date
New and updated content	This release adds support for a new managed rule: - dynamodb-throughput-limit-check (p. 112) For more information, see List of AWS Config Managed Rules (p. 98).	December 7, 2016
New and updated content	This release adds support for creating up to 50 rules per region in an account. For more information, see AWS Config Limits in the *AWS General Reference*.	December 7, 2016
AWS Config supports the managed instance inventory resource type for Amazon EC2 Systems Manager and three new managed rules	With this release, you can use AWS Config to record software configuration changes on your managed instances with support for managed instance inventory. For more information, see Recording Software Configuration for Managed Instances (p. 55). This release supports three new managed rules: - ec2-managedinstance-inventory-blacklisted (p. 116) - ec2-managedinstance-applications-required (p. 115) - ec2-managedinstance-platform-check (p. 117) For more information, see List of AWS Config Managed Rules (p. 98).	December 1, 2016
AWS Config supports the Amazon S3 bucket resource and two new managed rules	With this release, you can use AWS Config to record configuration changes to your Amazon S3 buckets. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9). This release supports two new managed rules: - s3-bucket-logging-enabled (p. 139) - s3-bucket-versioning-enabled (p. 142) For more information, see AWS Config Managed Rules (p. 98).	October 18, 2016

Feature	Description	Release Date
New and updated content	This release adds support for AWS Config and AWS Config Rules in the US East (Ohio) Region. For more information, see AWS Regions and Endpoints in the *AWS General Reference*.	October 17, 2016
New and updated managed rules	This update adds support for eight new managed rules: • approved-amis-by-id (p. 102) • approved-amis-by-tag (p. 102) • db-instance-backup-enabled (p. 109) • desired-instance-type (p. 111) • ebs-optimized-instance (p. 113) • iam-password-policy (p. 124) • rds-multi-az-support (p. 130) • rds-storage-encrypted (p. 131) You can specify multiple parameter values for the following rules: • desired-instance-tenancy (p. 110) • required-tags (p. 133) For more information, see List of AWS Config Managed Rules (p. 98).	October 4, 2016
New and updated content for the AWS Config console	This update adds support for viewing AWS CloudTrail API activity in the AWS Config timeline. If CloudTrail is logging for your account, you can view create, update, and delete API events for configuration changes to your resources. For more information, see Viewing Configuration Details (p. 33).	September 06, 2016
AWS Config supports Elastic Load Balancing resource type	With this release, you can use AWS Config to record configuration changes to your Elastic Load Balancing application load balancers. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9).	August 31, 2016
New and updated content	This release adds support for AWS Config Rules in the Asia Pacific (Singapore), and Asia Pacific (Sydney) Regions. For more information, see AWS Regions and Endpoints in the *AWS General Reference*.	August 18, 2016

Feature	Description	Release Date
New and updated content for AWS Config Rules	This update adds support for creating a rule that can be triggered by both configuration changes and at a periodic frequency that you choose. For more information, see Specifying Triggers for AWS Config Rules (p. 96). This update also adds support for manually evaluating your resources against your rule and deleting evaluation results. For more information, see Evaluating Your Resources (p. 164). This update also adds support for evaluating additional resource types using custom rules. For more information, see Evaluating Additional Resource Types (p. 151).	July 25, 2016
AWS Config supports Amazon RDS and AWS Certificate Manager (ACM) resource types	With this release, you can use AWS Config to record configuration changes to your Amazon Relational Database Service (Amazon RDS) DB instances, DB security groups, DB snapshots, DB subnet groups, and event subscriptions. You can also use AWS Config to record configuration changes to certificates provided by ACM. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9).	July 21, 2016
Updated information about managing the configuration recorder	This update adds steps for renaming and deleting the configuration recorder to Managing the Configuration Recorder (p. 50).	July 07, 2016
Simplified role creation and updated policies	With this update, creating an IAM role for AWS Config is simplified. This enhancement is available in regions that support Config rules. To support this enhancement, the steps in Setting Up AWS Config with the Console (p. 19) are updated, the example policy in Permissions for the Amazon S3 Bucket (p. 89) is updated, and the example policy in Granting Custom Permissions for AWS Config Users (p. 79) is updated.	March 31, 2016

Feature	Description	Release Date
Example functions and events for Config rules	This update provides updated example functions in Example AWS Lambda Functions for AWS Config Rules (Node.js) (p. 152), and this update adds example events in Example Events for AWS Config Rules (p. 157).	March 29, 2016
AWS Config Rules GitHub repository	This update adds information about the AWS Config Rules GitHub repository to Evaluating Resources with Rules (p. 93). This repository provides sample functions for custom rules that are developed and contributed by AWS Config users.	March 1, 2016
AWS Config Rules	This release introduces AWS Config Rules. With rules, you can use AWS Config to evaluate whether your AWS resources comply with your desired configurations. For more information, see Evaluating Resources with Rules (p. 93).	December 18, 2015
AWS Config supports IAM resource types	With this release, you can use AWS Config to record configuration changes to your IAM users, groups, roles, and customer managed policies. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9).	December 10, 2015
AWS Config supports EC2 Dedicated host	With this release, you can use AWS Config to record configuration changes to your EC2 Dedicated hosts. For more information, see AWS Config Supported AWS Resource Types and Resource Relationships (p. 9).	November 23, 2015
Updated permissions information	This update adds information about the following AWS managed policies for AWS Config: • `AWSConfigRole` – Grants AWS Config permission to get configuration details about your resources. For more information, see IAM Role Policy for Getting Configuration Details (p. 88). • `AWSConfigUserAccess` – Grants read-only access to an AWS Config user. For more information, see Granting Custom Permissions for AWS Config Users (p. 79).	October 19, 2015

Feature	Description	Release Date
AWS Config Rules preview	This release introduces the AWS Config Rules preview. With rules, you can use AWS Config to evaluate whether your AWS resources comply with your desired configurations. For more information, see Evaluating Resources with Rules (p. 93).	October 7, 2015
New and updated content	This release adds the ability to look up resources that AWS Config has discovered. For more information, see Looking Up Resources That Are Discovered by AWS Config (p. 32).	August 27, 2015
New and updated content	This release adds the ability to select which resource types AWS Config records. For more information, see Selecting Which Resources AWS Config Records (p. 52).	June 23, 2015
New and updated content	This release adds support for the following regions: Asia Pacific (Tokyo), Asia Pacific (Singapore), EU (Frankfurt), South America (São Paulo), and US West (N. California). For more information, see AWS Regions and Endpoints.	April 6, 2015
New and updated content	This release adds support for creating an optional email subscription to your Amazon SNS topic. You can also use email filters to monitor specific resource changes. For more information, see Monitoring AWS Config Resource Changes by Email (p. 56).	March 27, 2015
New and updated content	This release supports integration with AWS CloudTrail for logging all AWS Config API activity. For more information, see Logging AWS Config API Calls with AWS CloudTrail (p. 187). This release adds support for the US West (Oregon), EU (Ireland), and Asia Pacific (Sydney) regions. This release also includes the following updates to the documentation: • Information about monitoring AWS Config configurations • Various corrections throughout the document	February 10, 2015
New guide	This release introduces AWS Config.	November 12, 2014

AWS Glossary

For the latest AWS terminology, see the AWS Glossary in the *AWS General Reference*.