AWS Config & Systems Manager for EBS Volume Cost Optimization

Executive Summary: This document outlines a cost-effective strategy for managing and removing unused Elastic Block Storage (EBS) volumes using AWS Config and Systems Manager. This solution directly reduces cloud spending and improves resource utilization.

1. Problem Statement:

- Unused EBS volumes inflate storage costs.
- Manual cleanup is inefficient and prone to errors.

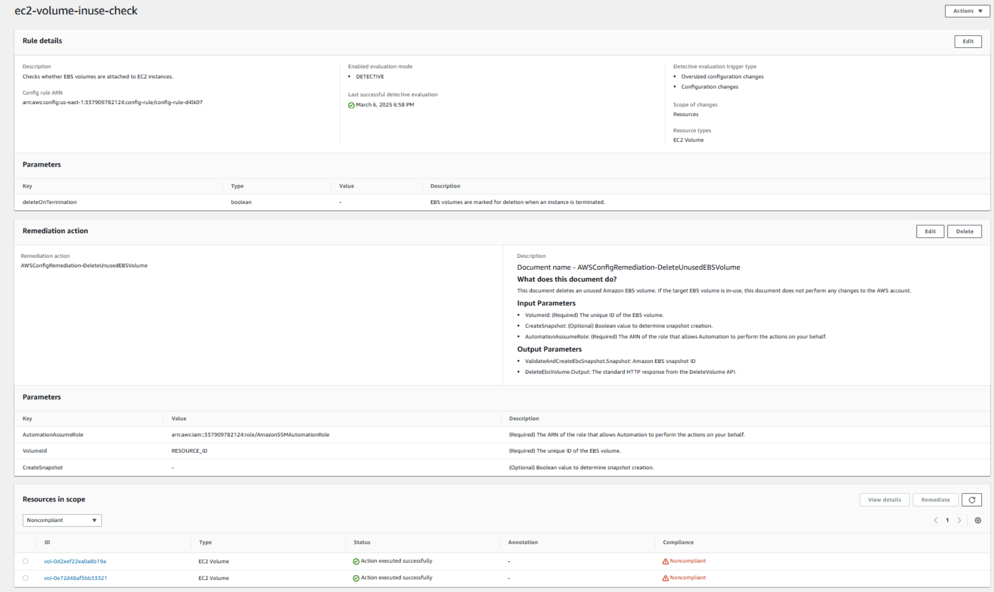
2. Proposed Solution:

Automate the identification and deletion of unused EBS volumes using:

- AWS Config: Continuously monitors EBS volume attachment status.
- AWS Systems Manager Automation: Automatically deletes unattached volumes.

3. Implementation Steps:

3.1. AWS Config Rule Setup

1. AWS Config: Navigate to the AWS Config service.
2. Add Rule: Create a new AWS Config rule.
3. Choose Managed Rule: Select "ec2-volume-inuse-check" to identify unattached volumes.
4. Configure Rule:
   - Name: (e.g., "UnusedEBSVolumeCheck")
   - Parameters: Set `deleteOnTermination` to `true` (recommended). We are not using this in our environment
5. Save: Create the rule.
6. 

ec2-volume-inuse-check

Rule details

Description
Checks whether EBS volumes are attached to EC2 instances.

Config rule ARN
arn:aws:config:us-east-1:337909782124:config-rule/config-rule-d4lk07

Enabled evaluation mode
- DETECTIVE

Last successful detective evaluation
✓ March 6, 2025 6:58 PM

Detective evaluation trigger type
- Oversized configuration changes
- Configuration changes

Scope of changes
Resources

Resource types
EC2 Volume

Parameters

Key	Type	Value	Description
deleteOnTermination	boolean	-	EBS volumes are marked for deletion when an instance is terminated.

Remediation action

Remediation action
AWSConfigRemediation-DeleteUnusedEBSVolume

Description
Document name - AWSConfigRemediation-DeleteUnusedEBSVolume

What does this document do?

This document deletes an unused Amazon EBS volume. If the target EBS volume is in-use, this document does not perform any changes to the AWS account.

Input Parameters

- VolumeId: (Required) The unique ID of the EBS volume.
- CreateSnapshot: (Optional) Boolean value to determine snapshot creation.
- AutomationAsssumeRole: (Required) The ARN of the role that allows Automation to perform the actions on your behalf.

Output Parameters

- ValidateAndCreateEbsSnapshot.Snapshot: Amazon EBS snapshot ID
- DeleteEbsVolume.Output: The standard HTTP response from the DeleteVolume API.

Parameters

Key	Value	Description
AutomationAssumeRole	arn:aws:iam::337909782124:role/AmazonSSMAutomationRole	(Required) The ARN of the role that allows Automation to perform the actions on your behalf.
VolumeId	RESOURCE_ID	(Required) The unique ID of the EBS volume.
CreateSnapshot	-	(Optional) Boolean value to determine snapshot creation.

Resources in scope

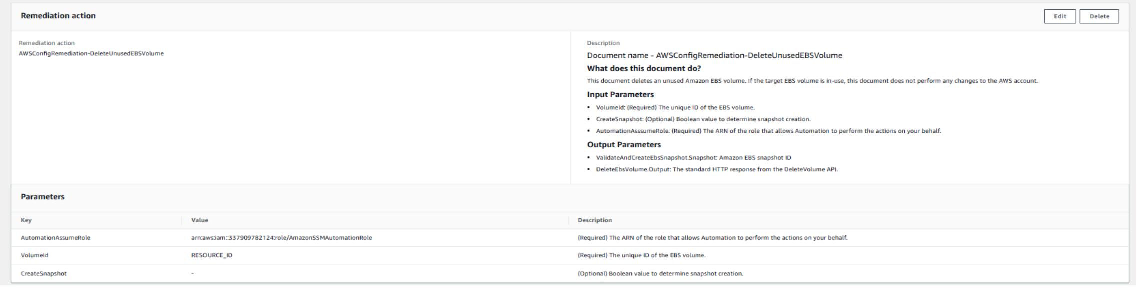
Noncompliant ▼

‹ 1 ›

	ID	Type	Status	Annotation	Compliance
○	vol-0d2eef22ea0a8b19a	EC2 Volume	✓ Action executed successfully	-	⚠ Noncompliant
○	vol-0e72d48af5bb33321	EC2 Volume	✓ Action executed successfully	-	⚠ Noncompliant

3.2. AWS Systems Manager Automation

1. AWS Systems Manager: Access the Systems Manager service.
2. Automation: Navigate to "Automation" and "Execute automation".
3. Choose Document: Use the `AWS-DeleteUnusedEBSVolumes` or custom automation document.
4. Input Parameters:
    - `VolumeId`: (Populated by AWS Config).
    - `AutomationAssumeRole`: Specify the IAM role for execution.



Remediation action

Remediation action
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Parameters

Key	Value	Description
AutomationAssumeRole	arn:aws:iam::337909782124:role/AmazonSSMAutomationRole	(Required) The ARN of the role that allows Automation to perform the actions on your behalf.
VolumeId	RESOURCE_ID	(Required) The unique ID of the EBS volume.
CreateSnapshot	-	(Optional) Boolean value to determine snapshot creation.

3.3. Integrating AWS Config with Systems Manager (Important):

1. Edit AWS Config Rule: Go back to the `ec2-volume-inuse-check` rule.
2. Add Remediation Action:
    - Associate the `AWS-DeleteUnusedEBSVolumes` (or custom) Systems Manager document.
    - Configure the `VolumeId` parameter using `${resourceId}`.
    - Enable "Automatic remediation" cautiously (manual approval recommended initially).

4. IAM Permissions:

The following IAM policy is needed for both AWS Config and SSM:

```
json
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": [
                "ec2:DeleteVolume",
                "ec2:DescribeVolumes",
                "ec2:DescribeSnapshots",
                "ec2:CreateSnapshot",
                "ssm:StartAutomationExecution",
                "ssm:GetAutomationExecution"
            ],
            "Resource": "*"
        }
    ]
}
```

5. Security Considerations:

- Use the least privilege IAM role.
- For data recovery, consider snapshotting volumes before deletion.

6. Cost Analysis:

- AWS Config: Costs are based on configuration items and rule evaluations.
- AWS Systems Manager: Automation costs are based on API calls. This is relatively minor.

7. Benefits:

- Reduced Cloud Costs: Eliminates charges for unused storage.
- Automated Efficiency: Reduces manual effort.

8. Scalability:

Easily deployable across multiple AWS accounts using AWS Organizations.

9. Monitoring:

Monitor compliance status in the AWS Config console.

10. Conclusion:

This automated solution provides a streamlined approach to reduce EBS volume costs.