PENTESTER ACADEMYTOOL BOX PENTESTING
PENTESTER ACADEMYTOOL BOX PENTESTING
PATURED TEAM LABS ATTACKDEFENSE LABS
RITAINING COURSES ACCESS POINT PENTESTER
TEAM LABSPENTESTER TOOL BOY DO TO TO TEAM LAB
PATURED TEAM LABS RELUTION TO TEAM LAB
RITAINING COURSES ACCESS POINT PENTESTER
TOOL BOX TOOL BOY DO TO TO TEAM LAB
ATTACKDEFENSE LABS TRAINING COURSES PATURE CESS
PENTESTED LEGISLACIONES TRAINING HACKER
TOOL BOX TOOL BOY PENTESTER ACADEMY
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Name	IAM Access Analyzer	
URL <a href="https://attackdefense.com/challengedetails?cid=2471">https://attackdefense.com/challengedetails?cid=2471</a>		
Type AWS Cloud Security : Defense		

**Important Note:** This document illustrates all the important steps required to complete this lab. This is by no means a comprehensive step-by-step solution for this exercise. This is only provided as a reference to various commands needed to complete this exercise and for your further research on this topic. Also, note that the IP addresses and domain names might be different in your lab.

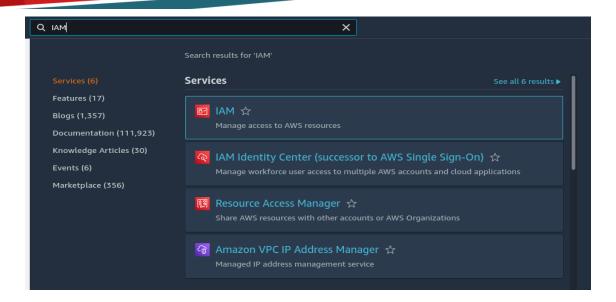
### Solution:

**Step 1:** Click the lab link button to get access credentials. Login to the AWS account with these credentials.

# **Access Credentials to your AWS lab Account**

Login URL	https://210855491654.signin.aws.amazon.com/console	
Region	US East (N. Virginia) us-east-1	
Username	david	
Password	Ad5OQyVG5mBCgbei	

**Step 2:** Search for "IAM" and navigate to the IAM dashboard.



Step 3: Click on "Access analyzer" from the access reports.

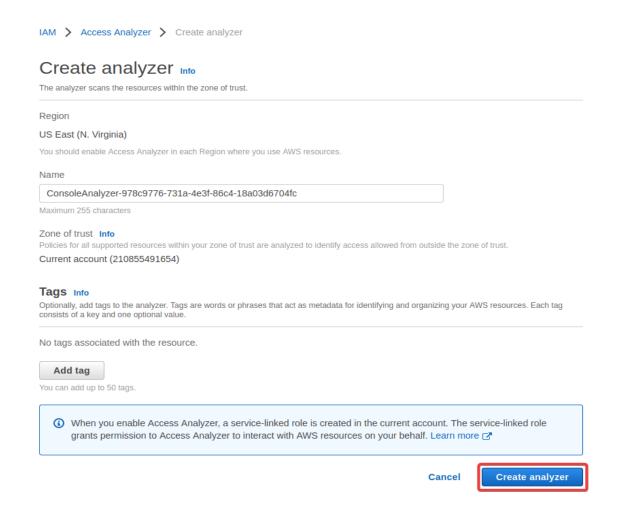


Step 4: Click on "Create analyzer".

Create analyzer

Step 5: Set everything as default and click on "Create analyzer".

Access Analyzer helps you identify the resources in your organization and accounts, such as Amazon S3 buckets or IAM roles, shared with an external entity. This lets you identify unintended access to your resources and data, which is a security risk.



After the successful creation of an access analyzer, it identifies resources shared with external principals by using logic-based reasoning to analyze the resource-based policies in your AWS environment and list them as findings in the active findings table.

**Step 6:** Click on "Finding ID" of the resource "Secret". This will list details about the finding.

Finding ID	Resource	External principal	Condition	Shared through
32170698-9ae4-4aa	Secret account-Uu6Tvt	AWS Account 002763723555	-	-
c673cc58-90f4-480c	S3 Bucket lab-zone-21085549	All Principals	-	Bucket policy
1fb7c1b2-33bc-4093	S3 Bucket lab-bucket-ip-2108	All Principals	Source IP 103.149.159.22/	Bucket policy
b5400d88-4d88-409	IAM Role TheOracle	AWS Account 719592403832	-	-
3b306705-ce94-413	IAM Role TheOracle	AWS Account 002763723555	-	-
ecf2469d-1c2f-4477	IAM Role ad_role	All Principals	-	-
077a5e86-278f-4abd	KMS Key aa94d1bb-5f4e-48	AWS Account 002763723555	-	-

This finding informs that the resource has been shared with an external AWS account having an id 002763723555.

# 32170698-9ae4-4aab-9eba-3abab927aa11 Info

# Finding ID 32170698-9ae4-4aab-9eba-3abab927aa11 Resource arn:aws:secretsmanager:useast-1:210855491654:secret:account 2 minutes ago External principal (AWS Account) 002763723555 Resource owner account 210855491654

This page also includes information about the access and the external principal granted to it.



#### Access level

#### Write

- · secretsmanager:CancelRotateSecret
- · secretsmanager:DeleteSecret
- secretsmanager:RemoveRegionsFromReplic ation
- · secretsmanager:ReplicateSecretToRegions
- · secretsmanager:RestoreSecret
- · secretsmanager:RotateSecret
- · secretsmanager:StopReplicationToReplica
- · secretsmanager:UpdateSecret
- · secretsmanager:UpdateSecretVersionStage

#### Permissions

- secretsmanager:DeleteResourcePolicy
- · secretsmanager:PutResourcePolicy
- · secretsmanager:ValidateResourcePolicy

#### Read

- · secretsmanager:DescribeSecret
- · secretsmanager:GetResourcePolicy
- · secretsmanager:ListSecretVersionIds
- · secretsmanager:UntagResource

#### Tagging

· secretsmanager:TagResource

**Step 7:** Right click on the resource arn and open the link in the new tab. This will make it easier to switch back to the analyzer dashboard.



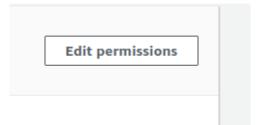
Step 8: Navigate to the "Resource permissions" and check out the resource policy.

In this resource-based policy, the IAM element Effect specifies whether the statement results in allow or an explicit deny. The IAM Action element defines the actions that are performed with

the secret. The IAM Resource element is the secret that the policy is attached to. The IAM Principal element specifies the user with access to perform actions with the secret.

This policy grants full access to the secret for the two AWS accounts. Remove the external AWS account arn and keep the one which having an arn of this account.

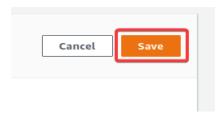
Click on "Edit permissions".



Remove the external AWS account arn from principal.

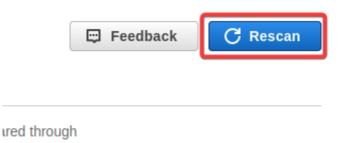
```
Resource permissions - optional Info
Add or edit a resource policy to access secrets across AWS accounts.
        "Version" : "2012-10-17",
   2
        "Statement" : [ {
   3 -
           "Sid" : "EnableAnotherAWSAccountToReadTheSecret",
   4
           "Effect" : "Allow",
           "Principal" : {
   6 +
             "AWS" : [ "arn:aws:iam::210855491654:root" ]
           },
"Action" : "secretsmanager:*",
   9
           "Resource" : "*"
  10
  11
        } ]
```

Click on "Save".



Now the access to the secret is only allowed for the current account. Now switch back to the tab which has an access analyzer dashboard.

**Step 9:** On the finding page, Click on the "Rescan" button to run a scan again in this particular resource.



If the resource is no longer shared outside of your zone of trust, the status of the finding is changed to Resolved. The finding is no longer displayed in the Active findings table, and instead

is displayed in the Resolved findings table. Now , the access is removed, the status changed to Resolved.

# 32170698-9ae4-4aab-9eba-3abab927aa11 Info

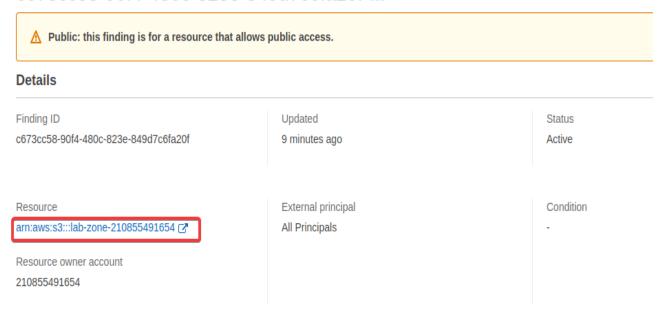
# **Details** Finding ID Updated Status Resolved 32170698-9ae4-4aab-9eba-3abab927aa11 a few seconds ago The access is no longer allowed External principal (AWS Account) Resource Condition 002763723555 arn:aws:secretsmanager:useast-1:210855491654:secret:account-Uu6Tvt Resource owner account 210855491654

**Step 10:** Click on "Finding ID" of the resource "S3 Bucket" which has a name that starts with "lab-zone".

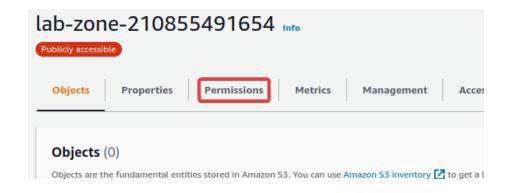
Finding ID	Resource	External principal	Condition	Shared through
c673cc58-90f4-480c	S3 Bucket lab-zone-21085549	All Principals		Bucket policy
1fb7c1b2-33bc-4093	S3 Bucket lab-bucket-ip-2108	All Principals	Source IP 103.149.159.22/	Bucket policy
b5400d88-4d88-409	IAM Role TheOracle	AWS Account 719592403832	-	
3b306705-ce94-413	IAM Role TheOracle	AWS Account 002763723555	-	
ecf2469d-1c2f-4477	IAM Role ad_role	All Principals	-	
077a5e86-278f-4abd	KMS Key aa94d1bb-5f4e-48	AWS Account 002763723555		-

**Step 11:** Right click on the resource arn and open the link in the new tab. This will navigate to the S3 dashboard.

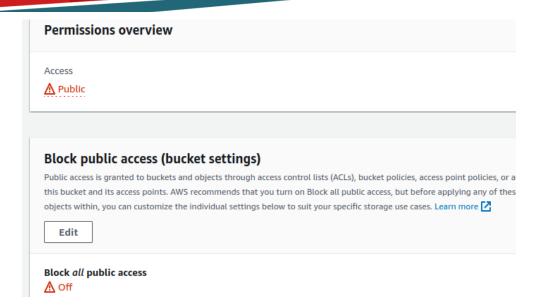
# c673cc58-90f4-480c-823e-849d7c6fa20f Info



Step 12: Click on Permissions.



Notice the permissions overview section. The access of this bucket is public.

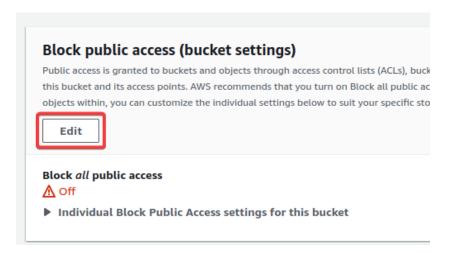


A bucket policy is a resource-based policy that you can use to grant access permissions to your bucket and the objects in it. Only the bucket owner can associate a policy with a bucket. The permissions attached to the bucket apply to all of the objects in the bucket that are owned by the bucket owner.

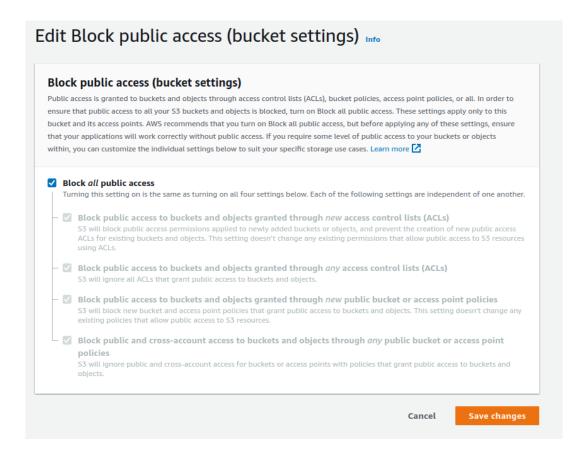
The following policy grants the Read, Write, List permission to any public anonymous users.

```
"Version": "2012-10-17",
"Statement": [
     "Sid": "",
     "Effect": "Allow",
     "Principal": {
       "AWS": "*"
    },
     "Action": [
       "s3:PutObject",
       "s3:ListBucket",
       "s3:GetObject"
    ],
     "Resource": [
       "arn:aws:s3:::lab-zone-210855491654/*",
       "arn:aws:s3:::lab-zone-210855491654"
    1
]
```

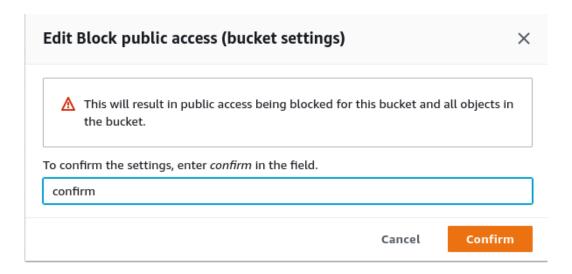
Step 13: Click on "Edit" under block public access.



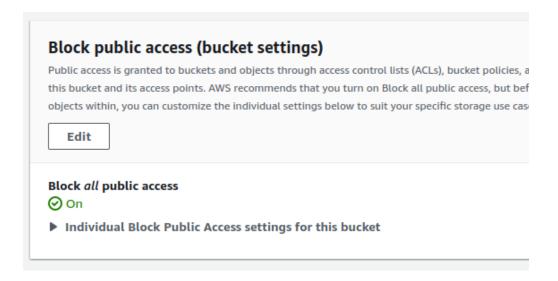
**Step 14:** Block all public access by checking the box and click on "Save changes".



Step 15: Enter "confirm" and save the settings.

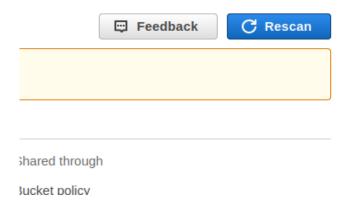


All public access to the bucket is blocked.



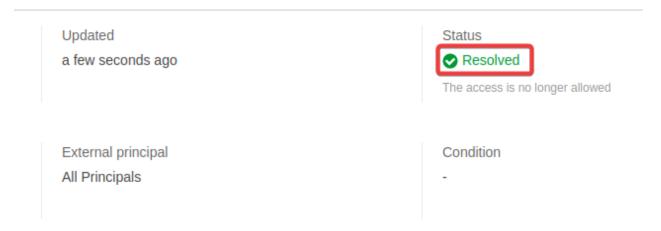
Switch to the tab which has an access analyzer dashboard.

**Step 16:** On the finding page, Click on the "Rescan" button to run a scan again in this particular resource.



The access is removed, the status changed to Resolved.

# 849d7c6fa20f Info



**Step 17:** Click on "Finding ID" of the resource "S3 Bucket" which has a name that starts with "lab-bucket-ip".

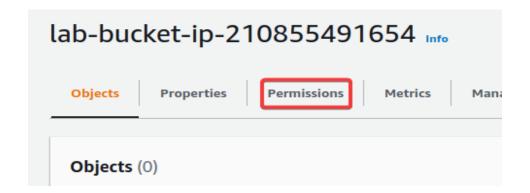
Finding ID	Resource	External principal	Condition
1fb7c1b2-33bc-4093	S3 Bucket lab-bucket-ip-2108	All Principals	Source IP 103.14
b5400d88-4d88-409	IAM Role TheOracle	AWS Account 719592403832	
3b306705-ce94-413	IAM Role TheOracle	AWS Account 002763723555	
ecf2469d-1c2f-4477	IAM Role ad_role	All Principals	
077a5e86-278f-4abd	KMS Key aa94d1bb-5f4e-48	AWS Account 002763723555	

**Step 18:** Right click on the resource arn and open the link in the new tab. This will navigate to the S3 dashboard.

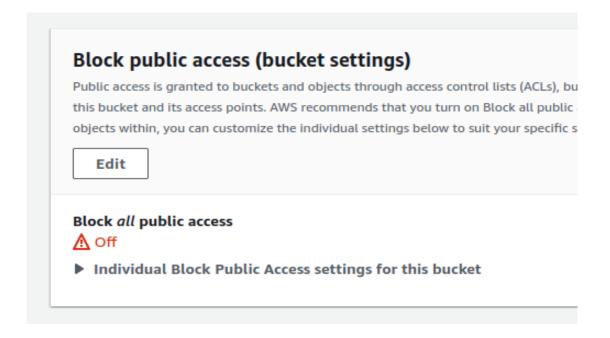
# 1fb7c1b2-33bc-4093-a08a-b604c78d70b2 Info

# Finding ID 1fb7c1b2-33bc-4093-a08a-b604c78d70b2 Resource arn:aws:s3:::lab-bucket-ip-210855491654 □ Resource owner account 210855491654 Updated 18 minutes ago External principal All Principals Condition Source IP: 103.149.159.2i

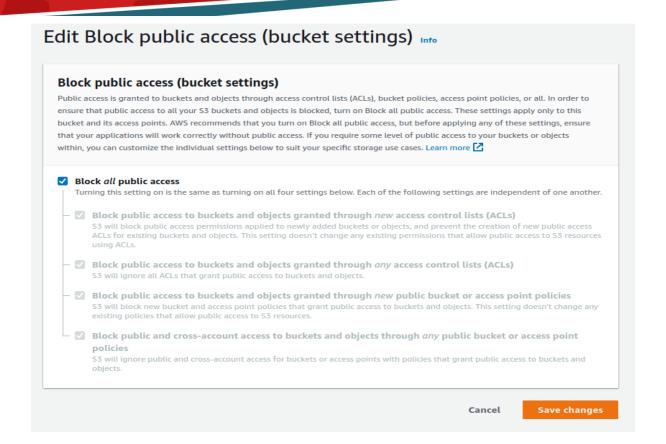
Step 19: Click on "Permissions".



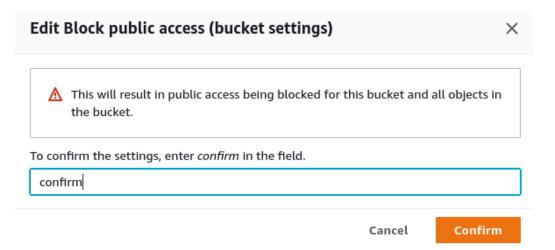
Step 20: Scroll down to the Block public access section and click on the "Edit" button.



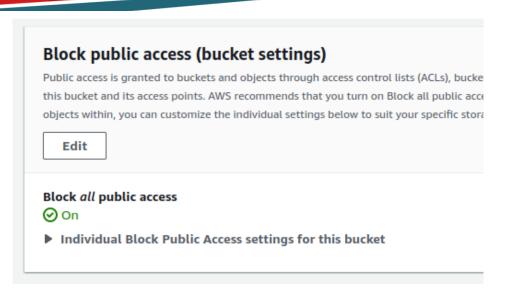
Step 21: Block all public access by checking the box and click on Save changes.



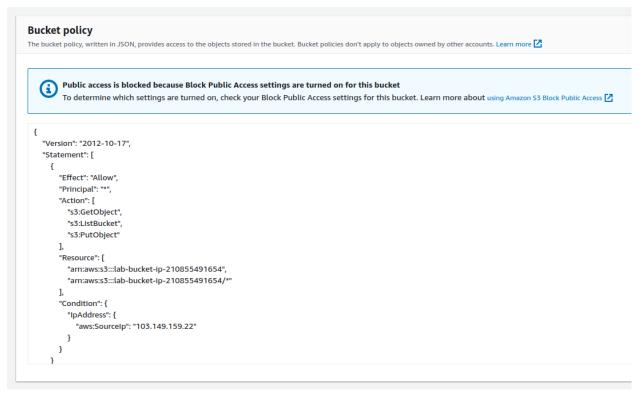
Enter "confirm" and save the settings.



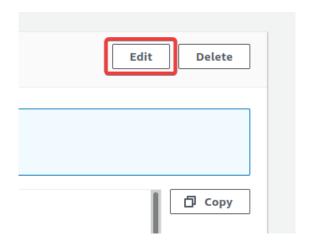
All the public access has been blocked.



The following policy denies permissions to any user to perform Amazon S3 Read, Write, List operations on objects in the specified S3 bucket unless the request originates from the IP address specified in the condition. This access will work even when you block all the public access to the bucket.



Step 22: Click on "Edit" under bucket policy.



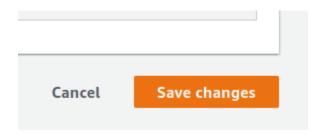
Change the Effect in the policy to "Deny". This denies permissions to user having the specified IP address to perform Amazon S3 Read, Write, List operations.

# **Policy**

```
1 + {
 2
         "Version": "2012-10-17",
 3 +
         "Statement": [
 4 +
                 "Effect": "Deny
 6
                 "Principal":
 7 +
                 "Action": [
 8
                     "s3:GetObject",
 9
                     "s3:ListBucket",
10
                     "s3:PutObject"
11
12 +
                "Resource": [
13
                     "arn:aws:s3:::lab-bucket-ip-210855491654",
14
                     "arn:aws:s3:::lab-bucket-ip-210855491654/*"
15
                ],
16 +
                 "Condition": {
17 +
                     "IpAddress": {
18
                         "aws:SourceIp": "103.149.159.22"
19
20
21
```

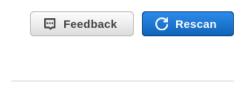


Click on "Save changes".



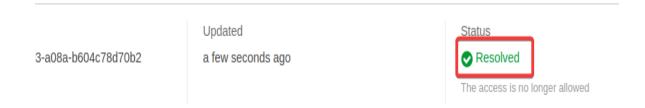
Switch to the tab which has an access analyzer dashboard.

**Step 23:** On the finding page, Click on the "Rescan" button to run a scan again in this particular resource.



The access is removed, the status changed to Resolved.

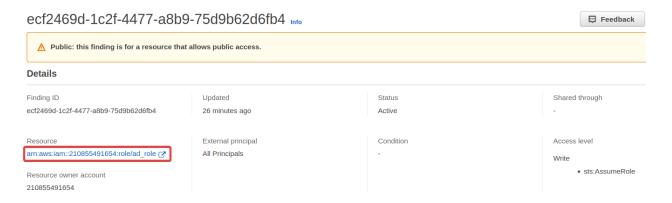
-33bc-4093-a08a-b604c78d70b2 Info



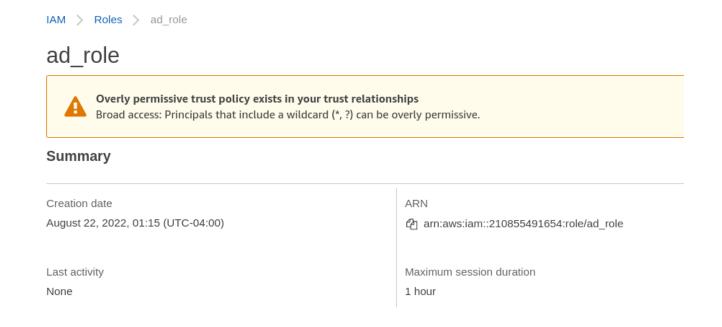
**Step 24:** Click on "Finding ID" of the resource "IAM Role" with the name "ad\_role".

Finding ID	Resource	External principal	Condition
b5400d88-4d88	IAM Role TheOracle	AWS Account 719592403832	
3b306705-ce94-4	IAM Role TheOracle	AWS Account 002763723555	-
ecf2469d-1c2f-44	IAM Role ad_role	All Principals	-
077a5e86-278f-4	KMS Key aa94d1bb-5f4e	AWS Account 002763723555	

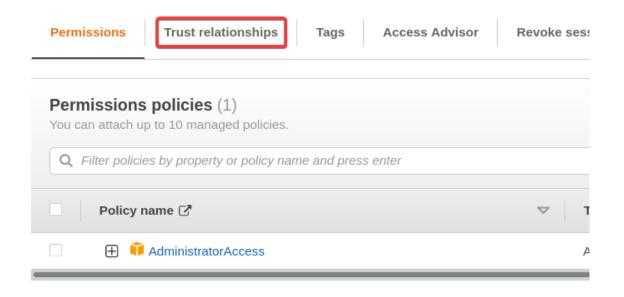
**Step 25:** Right click on the resource arn and open the link in the new tab. This will navigate to the IAM dashboard.



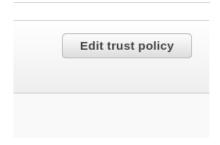
A trust policy is a document in which you define the principals that you trust to assume the role. A role trust policy is a required resource-based policy that is attached to a role in IAM. The principals that you can specify in the trust policy include users, roles, accounts, and services. This is an overly permissive trust policy.



Step 26: Click on "Trust relationships".



Step 27: Click on "Edit trust policy".



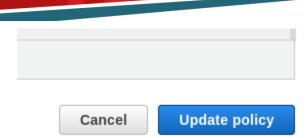
Step 28: Change the Effect to "Deny".

This trust policy allows full access to the AWS account and this can be assumed by anyone.

```
IAM > Roles > ad_role > Edit trust policy
```

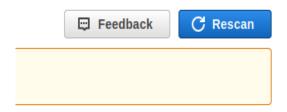
# Edit trust policy

Step 29: Update policy by clicking "Update policy".



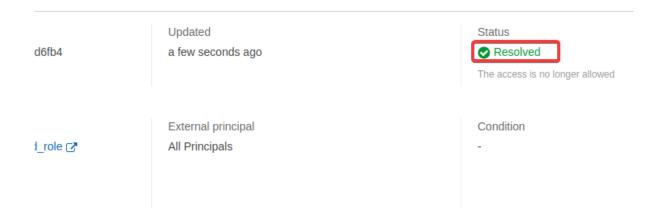
Switch to the tab which has an access analyzer dashboard.

**Step 30:** On the finding page, Click on the "Rescan" button to run a scan again in this particular resource.



The access is removed, the status changed to Resolved.

# 77-a8b9-75d9b62d6fb4 Info



**Step 31:** Navigate back to the analyzer dashboard. Click on "Finding ID" of the resource "KMS Key".

Finding ID	Resource	External principal
b5400d88-4d88-409	IAM Role TheOracle	AWS Account <b>719592403832</b>
3b306705-ce94-413	IAM Role TheOracle	AWS Account 002763723555
077a5e86-278f-4abd	KMS Key aa94d1bb-5f4e-48	AWS Account 002763723555

# Check the access level granted.

#### Access level

#### Permissions

- · kms:CreateGrant
- · kms:RetireGrant
- · kms:RevokeGrant

#### Write

- · kms:Decrypt
- · kms:Encrypt
- kms:GenerateDataKey
- kms:GenerateDataKeyPair
- kms:GenerateDataKeyPairWithoutPlaintext
- · kms:GenerateDataKeyWithoutPlaintext
- kms:ReEncryptFrom
- kms:ReEncryptTo
- kms:Sign
- · kms:Verify

#### Read

- kms:DescribeKey
- · kms:GetKeyRotationStatus
- kms:GetPublicKey

### List

kms:ListGrants

**Step 32:** Right click on the resource arn and open the link in the new tab. This will navigate to the KMS dashboard.

## 077a5e86-278f-4abd-958e-0087b5c1c9d3

# Pinding ID Updated Status 077a5e86-278f-4abd-958e-0087b5c1c9d3 31 minutes ago Active Resource External principal (AWS Account) Condition arn:aws:kms:us-east-1:210855491654:key/aa94d1bb-5f4e-481d-9ff5-70c6a69e3a96 ☑ 002763723555 Resource owner account 210855491654

AWS Key Management Service (KMS) gives you centralized control over the cryptographic keys used to protect your data. The service is integrated with other AWS services making it easy to encrypt data you store in these services and control access to the keys that decrypt it.

This key policy statement allows all actions (kms:\*) to two AWS accounts on the KMS key. Remove the external AWS account from the key policy.

```
Key policy
 1 {
        "Version": "2012-10-17",
 2
        "Statement": [
 3
 4
                "Sid": "EnableAnotherAWSAccountToReadKMS",
 5
                "Effect": "Allow",
 6
                "Principal": {
 7
                     "AWS":
 8
                         "arn:aws:iam::210855491654:root"
 9
                         "arn:aws:iam::002763723555:root
10
11
12
                "Action": "kms:*",
13
                 "Resource":
14
15
```

The principal in this key policy statement is the account principal, which is represented by an ARN in this format: arn:aws:iam::account-id:root. The account principal represents the AWS account and its administrators.

Step 33: Remove the external AWS account from the principal and click on "Save changes".

```
Key policy
 1 {
       "Version": "2012-10-17",
 2
      "Statement": [
 3
          {
               "Sid": "EnableAnotherAWSAccountToReadKMS",
 5
               "Effect": "Allow",
               "Principal": {
                   "AWS":
 8
                       "arn:aws:iam::210855491654:root"
 9
                   1
10
11
               "Action": "kms:*",
12
               "Resource": "*"
13
           }
14
15
       ]
                                                                      Save changes
                                                          Cancel
```

Switch to the tab which has an access analyzer dashboard.

**Step 34:** On the finding page, Click on the "Rescan" button to run a scan again in this particular resource.



The access is removed, the status changed to Resolved.

# 077a5e86-278f-4abd-958e-0087b5c1c9d3 Info

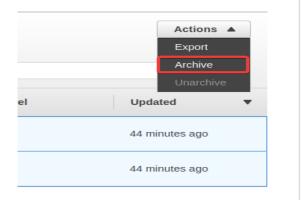
#### 

**Step 35:** Navigate back to the analyzer dashboard. Select all the findings with the name "TheOracle" and archive the findings.

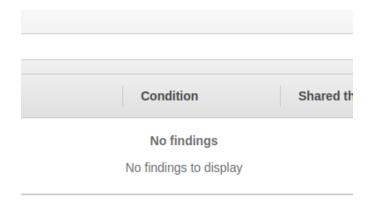
These findings are generated from an IAM role which was created intentionally for this lab and has no security threats. So archive the findings.

<b>Z</b>	Finding ID	Resource	External principal
<b>~</b>	b5400d88-4d88-409	IAM Role TheOracle	AWS Account 719592403832
<b>~</b>	3b306705-ce94-413	IAM Role TheOracle	AWS Account 002763723555

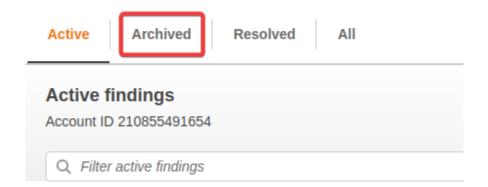
Step 36: Click on "Archive" under the actions.



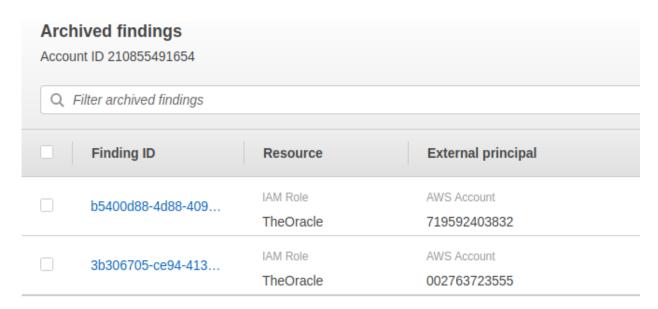
When you archive a finding, it is removed from Active findings and the status changes to Archived.



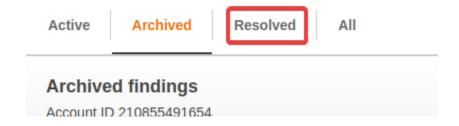
Click on "Archived" and navigate to archived findings.



This will list all the archived findings.



Click on "Resolved" and navigate to resolved findings.



This will list all the resolved findings.

	Resolved findings Account ID 210855491654				
Q	Filter resolved findings				
	Finding ID	Resource	External principal		
	077a5e86-278f-4abd	KMS Key aa94d1bb-5f4e-48	AWS Account 002763723555		
	ecf2469d-1c2f-4477	IAM Role ad_role	All Principals		
	1fb7c1b2-33bc-4093	S3 Bucket lab-bucket-ip-2108	All Principals		
	c673cc58-90f4-480c	S3 Bucket lab-zone-21085549	All Principals		
	32170698-9ae4-4aa	Secret account-Uu6Tvt	AWS Account 002763723555		

# References:

1. AWS Access Analyzer (https://docs.aws.amazon.com/IAM/latest/UserGuide/what-is-access-analyzer.html)