

Cloud



S3 &CF 每月寄送用量到email



# Agenda

- S3 自動化寄送設定
  - 設定SNS Topic
  - 設定Lambda
  - 設定EventBridge
- CloudFront自動化寄送設定



# S3 自動化寄送設定

# 設定SNS Topic



Amazon SNS > Topics

**Create topic**

Name	Type	ARN
<a href="#">cole-cf-usage-test1</a>	Standard	arn:aws:sns:ap-southeast-1:123456789012:cole-cf-usage-test1
<a href="#">cole-s3-usage-test1</a>	Standard	arn:aws:sns:ap-southeast-1:123456789012:cole-s3-usage-test1
<a href="#">Fred-iam</a>	Standard	arn:aws:sns:ap-southeast-1:123456789012:Fred-iam
<a href="#">jimmyec2alarm-CPUUtilization</a>	Standard	arn:aws:sns:ap-southeast-1:123456789012:jimmyec2alarm-CPUUtilization
<a href="#">PublicResourcesMonitor-NotificationTopic-Pypy...</a>	Standard	arn:aws:sns:ap-southeast-1:123456789012:PublicResourcesMonitor-NotificationTopic-Pypy...
<a href="#">RootAccessDetection</a>	Standard	arn:aws:sns:ap-southeast-1:123456789012:RootAccessDetection

# 設定SNS Topic



Amazon SNS > Topics > Create topic



## 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
- Subscription protocols: SQS

Standard

- Best-effort message ordering
- At-least once message delivery
- Subscription protocols: SQS, Lambda, Data Firehose, HTTP, SMS, email, mobile application endpoints

### Name

cole-s3-usage-test2

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.

# 設定SNS Topic



Amazon SNS > Topics > Create topic



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

## ▶ Delivery status logging - optional Info

These settings configure the logging of message delivery status to CloudWatch Logs.

## ▶ Tags - optional

A tag is a metadata label that you can assign to an Amazon SNS topic. Each tag consists of a key and an optional value. You can use tags to search and filter your topics and track your costs. [Learn more](#)

## ▶ Active tracing - optional Info

Use AWS X-Ray active tracing for this topic to view its traces and service map in Amazon CloudWatch. Additional costs apply.

[無標題]

其他保持預設，點Create topic

Cancel

Create topic

# 設定SNS Topic



Amazon SNS > Topics > cole-s3-usage-test2

Name: cole-s3-usage-test2

Display name: -

ARN: arn:aws:sns:us-east-1:027155467263:cole-s3-usage-test2

Topic owner: 027155467263

Type: Standard

紀錄ARN，等等Lambda需要用到

Subscriptions Access policy Data protection policy Delivery policy (HTTP/S) Delivery status logging Encrypt

Subscriptions (0) Edit Delete Request confirmation Confirm subscription Create subscription

Search

ID Endpoint Status

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# 設定SNS Topic



Amazon SNS > Subscriptions > Create subscription



## Topic ARN

arn:aws:sns:us-east-1:027155467263:cole-s3-usage-test2



## Protocol

The type of endpoint to subscribe

Email

## Endpoint

An email address that can receive notifications from Amazon SNS.

colelin@grandtechcloud.com

選擇要收信的email

i After your subscription is created, you must confirm it. [Info](#)

## ► Subscription filter policy - optional [Info](#)

This policy filters the messages that a subscriber receives.

# 設定SNS Topic



Amazon SNS > Topics > cole-s3-usage-test2 > Subscription: 791c66b6-e556-49de-aec8-8fe92ac87a0b



## Amazon SNS

Dashboard

Topics

Subscriptions

## ▼ Mobile

Push notifications

Text messaging (SMS)

✓ Subscription to cole-s3-usage-test2 created successfully.

The ARN of the subscription is arn:aws:sns:us-east-1:027155467263:cole-s3-usage-test2:791c66b6-e556-49de-aec8-8fe92ac87a0b.

## Subscription: 791c66b6-e556-49de-aec8-8fe92ac87a0b

[Edit](#) [Delete](#)

### Details

#### ARN

arn:aws:sns:us-east-1:027155467263:cole-s3-usage-test2:791c66b6-e556-49de-aec8-8fe92ac87a0b

#### Status

Pending confirmation

收驗證信

#### Endpoint

colelin@grandtechcloud.com

#### Protocol

EMAIL

#### Topic

cole-s3-usage-test2

#### Subscription Principal

arn:aws:iam::027155467263:role/aws-reserved/sso.amazonaws.com/eu-west-2/AWSReservedSSO\_AdministratorAccess\_ad73b4a3ff9b7341

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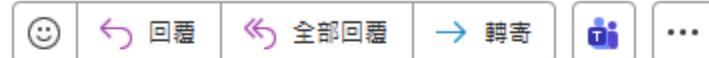
# 設定SNS Topic



## AWS Notification - Subscription Confirmation



AWS Notifications <no-reply@sns.amazonaws.com>  
收件者 Cole Lin - GCS



2025/11/7 (週五) 下午 02:22

將郵件翻譯為: 繁體中文 (繁體) | 一律不翻譯自: 英文 | 翻譯喜好設定

You have chosen to subscribe to the topic:

arn:aws:sns:us-east-1:027155467263:cole-s3-usage-test2

To confirm this subscription, click or visit the link below (If this was in error no action is necessary).

[Confirm subscription](#)

Please do not reply directly to this email. If you wish to remove yourself from receiving notifications, please unsubscribe.



Simple Notification Service

### Subscription confirmed!

You have successfully subscribed.

Your subscription's id is:

arn:aws:sns:us-east-1:027155467263:cole-s3-usage-test2:791c66b6-e556-49de-aec8-8fe92ac87a0b

If it was not your intention to subscribe, [click here to unsubscribe](#).

SNS設定完成

# 設定Lambda



Lambda > 函數

上次已擷取 0 秒前 動作 建立函數

函數名稱	描述	套件類型	執行時期	上次修改時間
<a href="#">reply_to_freshservice_crossaccount</a>	-	Zip	Python 3.12	2 年前
<a href="#">test-sts-role</a>	-	Zip	Python 3.12	2 年前
<a href="#">Test-header-custom</a>	-	Zip	nodejs14.x	4 年前
<a href="#">cole-s3-usage-test</a>	-	Zip	Python 3.13	3 小時前
<a href="#">CF-header</a>	-	Zip	nodejs14.x	4 年前
<a href="#">liya-cf-test</a>	-	Zip	Python 3.13	37 分鐘前

# 設定Lambda



三 Lambda > 函數 > 建立函式

① | ②

## 建立函式 資訊

選擇下列選項之一來建立您的函式。

### 從頭開始撰寫

從簡單的 Hello World 範例開始。

### 使用藍圖

透過常用案例的範本程式碼與組態預設，建置 Lambda 應用程式。

### 容器映像

選取要為函數部署的容器映像。

## 基本資訊

### 函數名稱

輸入描述函式目的之名稱。

cole-s3-usage-test2

函數名稱必須為 1 至 64 個字元，對於區域而言必須是唯一的，且不能包含空格。有效的字元為 a-z、A-Z、0-9、連字號 (-) 及底線 (\_)。

### 執行時間 | 資訊

選擇用於編寫功能的語言。請注意，控制台代碼編輯器僅支持Node.js，Python和Ruby。

Python 3.13



此範例是使用python

### 架構 | 資訊

為您的函式程式碼選擇您需要的指令集架構。

# 設定Lambda



Lambda > 函數 > 建立函式



Python 3.7



架構

資訊

為您的函式程式碼選擇您需要的指令集架構。

arm64

x86\_64

許可

資訊

預設情況下，Lambda 會建立具有將日誌上傳至 Amazon CloudWatch Logs 許可的執行角色。您可以在稍後新增觸發條件時，自訂此預設角色。

▶ 變更預設執行角色

▶ 其他組態

[無標題]

Use additional configurations to set up networking, security, and governance for your function. These settings help secure and customize your Lambda function deployment.

取消

建立函式

# 設定Lambda



三 Lambda > 函數 > cole-s3-usage-test2



## cole-s3-usage-test2

[調節](#)[複製 ARN](#)[操作 ▾](#)

▼ 函式概觀 [資訊](#)

[匯出至基礎架構編輯器](#)[下載 ▾](#)

[圖表](#) | [範本](#)

[+ 新增觸發](#)[+ 新增目的地](#)

描述

上次修改時間  
41 秒前

函數 ARN

[arn:aws:lambda:us-east-1:027155467263:function:cole-s3-usage-test2](#)

函數 URL [資訊](#)

[程式碼](#)[測試](#)[監控](#)[組態](#)[別名](#)[版本](#)

點選組態，這個步驟要給予Lambda權限

1. 抓取CloudWatch的metrics
2. 發佈到SNS
3. List S3所有bucket

# 設定Lambda



Lambda > 函數 > cole-s3-usage-test2

① | ②

程式碼 | 測試 | 監控 | **組態** | 別名 | 版本

一般組態

觸發

**許可**

目的地

函數 URL

環境變數

標籤

VPC

RDS 資料庫

監控和操作工具

## 執行角色

角色名稱

[cole-s3-usage-test2-role-xi811ms9](#)

點選該角色，會自動跳到IAM



編輯

檢視角色文件

## 資源摘要

若要檢視函式有權存取的資源和操作，請選擇一項服務。



Amazon CloudWatch Logs

3 actions, 2 resources



依操作

**依資源**

## 資源

操作

[arn:aws:logs:us-east-1:027155467263:\\*](#)

Allow : logs>CreateLogGroup

# 設定Lambda



IAM > Roles > cole-s3-usage-test2-role-xi811ms9

Identity and Access Management (IAM)

Search IAM

Dashboard

Access management

- User groups
- Users
- Roles**
- Policies
- Identity providers
- Account settings
- Root access management

Access reports

- Access Analyzer
- Resource analysis New

Permissions    Trust relationships    Tags    Last Accessed    Revoke sessions

**Permissions policies (1) Info**

You can attach up to 10 managed policies.

Filter by Type: All types

Policy name	Type	Attached entities
AWSLambdaBasicExecutionRole-55690e98-59...	Customer managed	1

Simulate   Remove   Add permissions

Attach policies   Create inline policy

Permissions boundary (not set)

Generate policy based on CloudTrail events

You can generate a new policy based on the access activity for this role, then customize, create, and attach it to this role. AWS uses your CloudTrail events to identify the services and actions used and generate a policy. [Learn more](#)

Generate policy

# 設定Lambda

```
{  
    "Version": "2012-10-17",  
    "Statement": [  
        {  
            "Effect": "Allow",  
            "Action": [  
                "cloudwatch:GetMetricStatistics",  
                "cloudwatch>ListMetrics"  
            ],  
            "Resource": "*"  
        },  
        {  
            "Effect": "Allow",  
            "Action": [  
                "sns:Publish"  
            ],  
            "Resource": "*"  
        }  
    ]  
}
```

新增一個自訂policy，左邊是JSON範例  
該policy給予：  
1. 抓取CloudWatch的metrics  
2. 發佈到SNS

Policy name	Type	Attached entities
AWSLambdaBasicExecutionRole-55690e98-59...	Customer managed	1
cole-1107test	Customer inline	0

**cole-1107test**

```
1 [ {  
2     "Version": "2012-10-17",  
3     "Statement": [  
4         {  
5             "Effect": "Allow",  
6             "Action": [  
7                 "cloudwatch:GetMetricStatistics",  
8                 "cloudwatch>ListMetrics"  
9             ],  
10            "Resource": "*"  
11        },  
12        {  
13            "Effect": "Allow",  
14            "Action": [  
15                "sns:Publish"  
16            ],  
17            "Resource": "*"  
18        },  
19        {  
20            "Effect": "Allow",  
21        }  
22    ]  
23}  
24]
```

[Copy JSON](#) [Edit](#)

# 設定Lambda



IAM > Roles > cole-s3-usage-test2-role-xi811ms9

Identity and Access Management (IAM)

Creation date: November 07, 2025, 14:26 (UTC+08:00)

Last activity: -

ARN: arn:aws:iam::027155467263:role/service-role/cole-s3-usage-test2-role-xi811ms9

Maximum session duration: 1 hour

Permissions | Trust relationships | Tags | Last Accessed | Revoke sessions

Permissions policies (2) Info

You can attach up to 10 managed policies.

Filter by Type: All types

Policy name	Type	Attached entities
AWSLambdaBasicExecutionRole-55690e98-59...	Customer managed	1
cole-1107test	Customer inline	0

cole-1107test

Copy JSON | Edit

Simulate | Remove | Add permissions | Attach policies | Create inline policy

Search

Access management

- User groups
- Users
- Roles
- Policies
- Identity providers
- Account settings
- Root access management

Access reports

- Access Analyzer
- Resource analysis New

# 設定Lambda



IAM > Roles > cole-s3-usage-test2-role-xi811ms9 > Add Permissions



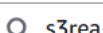
Attach policy to cole-s3-usage-test2-role-xi811ms9

▶ Current permissions policies (1)

Other permissions policies (1239)



Filter by Type



s3rea



All types

1 match



1



Policy name

Type

Description

[AmazonS3ReadOnlyAccess](#)

AWS managed

Provides read only access to all buckets vi...

給予S3 list的權限

Cancel

Add permissions

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# 設定Lambda

IAM > Roles > cole-s3-usage-test2-role-xi811ms9

Identity and Access Management (IAM)

Search IAM

Dashboard

Access management

- User groups
- Users
- Roles**
- Policies
- Identity providers
- Account settings
- Root access management

Access reports

- Access Analyzer
- Resource analysis New

Permissions policies (3) Info

You can attach up to 10 managed policies.

Filter by Type

Policy name	Type	Attached entities
AmazonS3ReadOnlyAccess	AWS managed	5
AWSLambdaBasicExecutionRole-55690e98-59...	Customer managed	1
cole-1107test	Customer inline	0

▶ Permissions boundary (not set) 總共會有3個policy

▼ Generate policy based on CloudTrail events

# 設定Lambda



三 Lambda > 函數 > cole-s3-usage-test2

① ②

程式碼 | 測試 | 監控 | **組態** | 別名 | 版本

一般組態

觸發

許可

目的地

函數 URL

環境變數

標籤

VPC

RDS 資料庫

監控和操作工具

一般組態 資訊

編輯

描述

-

記憶體

128 MB

暫時性儲存

512 MB

逾時

0 分鐘 3 秒

SnapStart 資訊

None

修改逾時時間，先前測試跑抓S3的metric需要20幾秒  
如果稍後測試超過逾時時間，需回來這邊修改

# 設定Lambda



Lambda > 函數 > cole-s3-usage-test2 > 編輯基本設定

① | ②

將暫時性儲存 (/tmp) 設為介於 512 MB 與 10,240 MB 之間。

## SnapStart | 資訊

透過讓 Lambda 在函數初始化後快取函數的快照來縮短啟動時間。若要評估您的函數程式碼是否能夠對快照操作做出靈活反應，請檢閱 [SnapStart 相容性考量](#)。針對 Python 和 .NET 執行時期，[請檢視定價](#)。

None

支援的執行時間：.NET 8 (C#/F#/PowerShell), Java 11, Java 17, Java 21, Python 3.12, Python 3.13。

## 逾時

0 分鐘 30 秒

## 執行角色

選擇定義函數許可的角色。欲建立自訂角色，請前往 [IAM 主控台](#)。

使用現有的角色

透過 AWS 政策模板建立新的角色

## 現有角色

選擇您已建立的現有角色，以搭配此 Lambda 函式使用。該角色必須擁有將日誌上傳至 Amazon CloudWatch Logs 的許可。

service-role/cole-s3-usage-test2-role-xi811ms9



[在 IAM 主控台上檢視 cole-s3-usage-test2-role-xi811ms9 角色](#)

取消

儲存

# 設定Lambda



Lambda > 函數 > cole-s3-usage-test2



程式碼 测試 監控 組態 別名 版本

程式碼來源 資訊

Open in Visual Studio Code ↗ 上傳於 ▾

EXPLORER COLE-S3-USAGE-TEST2 lambda\_function.py ...

lambda\_function.py x

```
λ lambda_function.py
1 import json
2
3 def lambda_handler(event, context):
4     # TODO implement
5     return {
6         'statusCode': 200,
7         'body': json.dumps('Hello from Lambda!')
8     }
9
```

Deploy (Ctrl+Shift+U)

Test (Ctrl+Shift+I)

The screenshot shows the AWS Lambda function configuration interface. The '程式碼' tab is selected and highlighted with a red border. The main area displays the source code for 'lambda\_function.py'. The code is a simple Python function that imports json and defines a lambda\_handler function. This function returns a JSON response with a status code of 200 and a body containing the string 'Hello from Lambda!'. Below the code editor, there are buttons for 'Deploy' and 'Test'. On the left, there's an 'EXPLORER' sidebar showing the project structure under 'COLE-S3-USAGE-TEST2' and a 'DEPLOY' section with deployment buttons. At the top right, there are links to 'Open in Visual Studio Code' and 'Upload'.

# 設定Lambda



Lambda > Functions > cole-s3-usage-test

⋮ ⓘ ⓘ

Code source ⚡ Info

Open in Visual Studio Code ↗

Upload from ⏺

⌄

EXPLORER

COLE-S3-USAGE-TEST

- lambda\_function.py

DEPLOY [UNDEPLOYED CHANGES]

⚠ You have undeployed changes.

Deploy (Ctrl+Shift+U)

Test (Ctrl+Shift+I)

TEST EVENTS [SELECTED: TEST]

- + Create new test event
- Private saved events

λ lambda\_function.py ×

```
λ lambda_function.py
1 import boto3, datetime
2 from botocore.config import Config
3
4 CFG = Config(retries={'max_attempts': 5}, connect_timeout=2, read_timeout=8)
5
6 sns = boto3.client('sns', region_name='us-east-1', config=CFG) # SNS 放你想用的區
7 s3 = boto3.client('s3', config=CFG)
8
9 TOPIC_ARN = 'arn:aws:sns:us-east-1:027155467263:cole-s3-usage-test2' # 換成你的
10
11 # 快取：不同區域的 CloudWatch client
12 cw_clients = {}
13
14 def cloudwatch_in(region: str):
15     if region not in cw_clients:
16         cw_clients[region] = boto3.client('cloudwatch', region_name=region, config=CFG)
17     return cw_clients[region]
18
19 def get_bucket_region(bucket: str) -> str:
```



寫好程式碼(爬CloudWatch資料並發佈到SNS)

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# 設定Lambda



Lambda > 函數 > cole-s3-usage-test2



已成功更新函數 cole-s3-usage-test2。



The screenshot shows the AWS Lambda function editor interface. On the left, the EXPLORER sidebar lists the project structure: COLE-S3-USAGE-TEST2 (selected) and lambda\_function.py. Below it is the DEPLOY section with two buttons: 'Deploy (Ctrl+Shift+U)' (highlighted with a red box) and 'Test (Ctrl+Shift+I)'. At the bottom of the sidebar is the 'TEST EVENTS [NONE SELECTED]' section with a '+ Create new test event' link. The main area displays the 'lambda\_function.py' code:

```
69 def lambda_handler(event, context):
70     rows.sort(key=lambda x: (-1 if x[2] is None else x[2]), reverse=True)
71
72     # 明確逐行列印，每個 bucket 獨立一行
73     report_lines = []
74     report_lines.append("📦 S3 Storage Report (All buckets, KB)")
75     report_lines.append(f"Total buckets: {len(rows)}")
76     report_lines.append("") # 空行
77     for b, region, kb in rows:
78         report_lines.append(f"{b} [{region}]: {'N/A' if kb is None else f'{kb:.2f} KB'}")
79
80     # 以 \n 連接，確保每行分開
81     msg = "```\n" + "\n\n".join(report_lines) + "\n```"
82
83     sns.publish(
84         TopicArn=TOPIC_ARN,
85         Subject='S3 Monthly Usage Report (KB)',
86         Message=msg
87     )
```

部屬Code

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# 設定Lambda



Lambda > 函數 > cole-s3-usage-test2



已成功更新函數 cole-s3-usage-test2。



The screenshot shows the AWS Lambda function configuration interface within the Visual Studio Code (VS Code) environment. The code editor displays the `lambda_function.py` file, which contains Python code for generating an S3 storage report. The code uses the `sns.publish` method to send the report to an SNS topic. A red box highlights the `Test (Ctrl+Shift+I)` button in the Deploy panel, and the text "測試Code" is overlaid in red at the bottom left of the interface.

```
def lambda_handler(event, context):
    rows.sort(key=lambda x: (-1 if x[2] is None else x[2]), reverse=True)

    # 確明逐行列印，每個 bucket 獨立一行
    report_lines = []
    report_lines.append("📦 S3 Storage Report (All buckets, KB)")
    report_lines.append(f"Total buckets: {len(rows)}")
    report_lines.append("") # 空行
    for b, region, kb in rows:
        report_lines.append(f"{b} [{region}]: {'N/A' if kb is None else f'{kb:.2f} KB'}")

    # 以 \n 連接，確保每行分開
    msg = "```\n" + "\n".join(report_lines) + "\n```"

    sns.publish(
        TopicArn=TOPIC_ARN,
        Subject='S3 Monthly Usage Report (KB)',
        Message=msg
    )
```

## 設定 Lambda



Lambda > 函數 > cole-s3-usage-test2

1

X

已成功更新函數 cole-s3-usage-test2。

Select

```
Create new test event
da_handler(event, context):
    .sort(key=lambda x: (-1 if x[2] is None else x[2]), reverse=True)

确保逐行列印，每個 bucket 獨立一行
rt_lines = []
rt_lines.append("📦 S3 Storage Report (All buckets, KB)")
rt_lines.append(f"Total buckets: {len(rows)}")
rt_lines.append("") # 空行
for b, region, kb in rows:
    report_lines.append(f"{b} [{region}]: {'N/A' if kb is None else f'{kb:.2f} KB'}")

\n 連接，確保每行分開
= "```\n" + "\n\n".join(report_lines) + "\n```"
publish(
    TopicArn=TOPIC_ARN,
    Subject='S3 Monthly Usage Report (KB)',
    Message=msg
```

▼ TEST EVENTS [NONE SELECTED]

Test (Ctrl+Shift+I)

# GrandTechCloudServices

# 設定Lambda



Lambda > 函數 > cole-s3-usage-test2

已成功更新函數 cole-s3-usage-test2。

← → ⌂ cole-s3-usage-test2

EXPLORER

- COLE-S3-USAGE-TEST2
  - lambda\_function.py
- DEPLOY
  - Deploy (Ctrl+Shift+U)
  - Test (Ctrl+Shift+I)
- TEST EVENTS [NONE SELECTED]
  - Create new test event

```
lambda_function.py
69 def lambda_handler(event, context):
70     rows.sort(key=lambda x: (-1 if x[2] is None else x[2]), reverse=True)
71
72     # 開頭逐行列印，每個 bucket 獨立一行
73     report_lines = []
74     report_lines.append("S3 Storage Report (All buckets")
75     report_lines.append(f"Total buckets: {len(rows)}")
76     report_lines.append("") # 空行
77     for b, region, kb in rows:
78         report_lines.append(f"{b} [{region}]: {'N/A' if kb
79
80         # 以 \n 連接，確保每行分開
81         msg = "```\n" + "\n\n".join(report_lines) + "\n```"
82
83         sns.publish(
84             TopicArn=TOPIC_ARN,
85             Subject='S3 Monthly Usage Report (KB)',
86             Message=msg
87
88
89
90
91
92
93
94
95
96 )
```

Create new test event

Invoke Save

## Create new test event

Event Name

test

Maximum of 25 characters consisting of letters, numbers, dots, hyphens and underscores.

Event sharing settings

Private

This event is only available in the Lambda Console and to the event creator. You can configure a total of ten.  
[Learn more](#)

Shareable

This event is available to IAM users within the same account who have permissions to access and use shareable events. [Learn more](#)

Template - optional

Hello World

Event JSON

```
1 {
2   "key1": "value1",
3 }
```

## 設定 Lambda



[Lambda](#) > [函數](#) > cole-s3-usage-test2

1

程式碼來源 資訊

[Open in Visual Studio Code ↗](#)

上傳於

1

EXPLORER

COLE-S3-USAGE-TEST2

lambda\_function.py

DEPLOY

Deploy (Ctrl+Shift+U)

Test (Ctrl+Shift+I)

TEST EVENTS [SELECTED: TEST]

+ Create new test event

Private saved events

test

lambda\_function.py

```
def lambda_handler(event, context):
    for b in buckets:

        # 依用量排序 (N/A 放最後)
        rows.sort(key=lambda x: (-1 if x[2] is None else x[2]),

        # 明確逐行列印，每個 bucket 獨立一行
        report_lines = []
        report_lines.append("📦 S3 Storage Report (All buckets")
        report_lines.append(f"Total buckets: {len(rows)}")
        report_lines.append("") # 空行
        for b, region, kb in rows:
            report_lines.append(f"{b} [{region}]: {'N/A' if kb

        # 以 \n 連接，確保每行分開
        msg = "```\n" + "\n\n".join(report_lines) + "\n```"

        sns.publish(
            TopicArn=TOPIC_ARN,
            Subject='S3 Monthly Usage Report (KB)'
```

Create new test event

Event Name

test

Maximum of 25 characters consisting of letters, numbers, dots, hyphens and underscores.

Event sharing settings

Private

This event is only available in the Lambda Console and to the event creator. You can configure a total of ten.  
[Learn more](#)

Shareable

This event is available to IAM users within the same account who have permissions to access and use shareable events. [Learn more](#)

Template - optional

test

Event JSON

```
1 {  
2   "key1": "value1",  
3   "key2": "value2",  
4 }
```

# GrandTechCloudServices

# 設定Lambda



Lambda > 函數 > cole-s3-usage-test2

The screenshot shows the AWS Lambda function configuration interface for the function 'cole-s3-usage-test2'. On the left, there's a sidebar with icons for file operations, search, deployment, and environment variables. The main area shows the code editor with 'lambda\_function.py' containing Python code for generating an S3 storage report. Below the code editor are tabs for PROBLEMS, OUTPUT, CODE REFERENCE LOG, and TERMINAL. A red box highlights the 'Test (Ctrl+Shift+I)' button in the Deploy section. Another red box highlights the 'Test (Ctrl+Shift+I)' button in the TEST EVENTS section. A message at the bottom right says 'Test event is saved successfully.' The status bar at the bottom shows file statistics (Ln 12, Col 16), encoding (UTF-8), language (Python), and layout (Layout: US).

```
def lambda_handler(event, context):
    rows.sort(key=lambda x: (-1 if x[2] is None else x[2]), reverse=True)

    # 明確逐行列印，每個 bucket 獨立一行
    report_lines = []
    report_lines.append("📦 S3 Storage Report (All buckets, KB)")
    report_lines.append(f"Total buckets: {len(rows)}")
    report_lines.append("") # 空行
    for b, region, kb in rows:
        report_lines.append(f"[{b}] [{region}]: {'N/A' if kb is None else f'{kb:.2f} KB'}")
```

PROBLEMS OUTPUT CODE REFERENCE LOG TERMINAL

Execution Results

再點選一次Test

TEST EVENTS [SELECTED: TEST]

- + Create new test event
- Private saved events
  - test

ENVIRONMENT VARIABLES

Ln 12, Col 16 Spaces: 4 UTF-8 LF Python Lambda Layout: US

# 設定Lambda



Lambda > 函數 > cole-s3-usage-test2

COLE-S3-USAGE-TEST2  
lambda\_function.py

```
def lambda_handler(event, context):
    rows.sort(key=lambda x: (-1 if x[2] is None else x[2]), reverse=True)

    # 明確逐行列印，每個 bucket 獨立一行
    report_lines = []
    report_lines.append("📦 S3 Storage Report (All buckets, KB)")
    report_lines.append(f"Total buckets: {len(rows)}")
    report_lines.append("") # 空行
    for b, region, kb in rows:
        report_lines.append(f"{b} [{region}]: {'N/A' if kb is None else f'{kb:.2f} KB'}")
```

DEPLOY  
Deploy (Ctrl+Shift+U)  
Test (Ctrl+Shift+I)

PROBLEMS OUTPUT CODE REFERENCE LOG TERMINAL Execution Results

Status: Succeeded **測試成功**

Test Event Name: test

Response:

```
{
  "buckets": 43
}
```

TEST EVENTS [SELECTED: TEST]  
Create new test event  
Private saved events  
test

ENVIRONMENT VARIABLES

Function Logs:  
START RequestId: 9cb2040a-fd5d-4e62-a725-26c5b8b4f390 Version: \$LATEST  
END RequestId: 9cb2040a-fd5d-4e62-a725-26c5b8b4f390  
REPORT RequestId: 9cb2040a-fd5d-4e62-a725-26c5b8b4f390 Duration: 20630.10 ms Billed Duration: 21272 ms Memory Size: 128 MB Max Memory Used: 98 MB Init Duration: 641.08 ms

Ln 12, Col 16 Spaces: 4 UTF-8 LF Python Lambda Layout: US

# 設定Lambda



## S3 Monthly Usage Report (KB)



AWS Notifications <no-reply@sns.amazonaws.com>

收件者 Cole Lin - GCS

將郵件翻譯為: 繁體中文 (繁體)

一律不翻譯自: 英文

翻譯喜好設定

...

### S3 Storage Report (All buckets, KB)

Total buckets: 43

n2ws-fredlee [ap-southeast-1]: 21,770,023.84 KB

glueworkshop-027155467263-eu-west-3 [eu-west-3]: 10,403,795.47 KB

rick-s3-for-lambda [ap-northeast-1]: 4,723,732.64 KB

demitest-123 [us-east-1]: 3,300,271.71 KB

aws-cloudtrail-logs--mark-test [ap-southeast-1]: 2,122,496.04 KB

freds3forvmdk [ap-southeast-1]: 826,710.09 KB

fredimportvmdk [ap-southeast-1]: 826,710.04 KB

fredcurbucket [ap-southeast-1]: 792,833.43 KB

cloudtrail-248189907648 [ap-southeast-1]: 295,469.27 KB

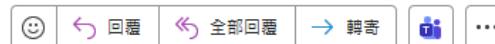
aws-quicksetup-patchpolicy-access-log-027155467263-9bee-2mzpi [ap-southeast-1]: 62,518.23 KB

aws-quicksetup-patchpolicy-027155467263-2mzpi [ap-southeast-1]: 43,180.33 KB

17live.2022.event [ap-southeast-1]: 22,691.92 KB

demitest [us-east-1]: 7,050.99 KB

cole-s3-api-log-bucket [us-east-1]: 456.98 KB



2025/11/7 (週五) 下午 02:1

測試會連同發信，Lambda設定完成

dTechCloudServices

# 設定EventBridge



Amazon EventBridge < Application Integration

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Developer resources

- Learn
- Sandbox
- Quick starts

Buses

- Event buses [Updated](#)
- Rules
- Global endpoints
- Archives
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Pipes

- Pipes

Scheduler

- Schedules

**Amazon EventBridge**

## A serverless service for building event-driven applications

Amazon EventBridge is a serverless service that uses events to connect application components together, making it easier for developers to build scalable event-driven applications.

**Get started**

- EventBridge Rule**  
A rule matches incoming events and sends them to targets for processing.
- EventBridge Pipes**  
A pipe connects an event source to a target with optional filtering and enrichment.
- EventBridge Schedule**  
A schedule invokes a target one-time or at regular intervals defined by a cron or rate expression.
- EventBridge Schema registry**  
Schema registries collect and organize schemas.

[Create rule](#)

**Pricing**

# 設定EventBridge



Amazon EventBridge > Rules > Create rule

Amazon EventBridge

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- Schedule groups

Step 1 Define rule detail

Step 2 Define schedule

Step 3 Select target(s)

Step 4 - optional Configure tags

Step 5 Review and create

## Define rule detail Info

### Rule detail

**Name**  
cole-s3-usage-test2  
Maximum of 64 characters consisting of numbers, lower/upper case letters, .,-\_.

**Description - optional**

**Event bus** | Info  
Select the event bus this rule applies to, either the default event bus or a custom or partner event bus.  
default

Enable the rule on the selected event bus

**Rule type** | Info

Rule with an event pattern  
A rule that runs when an event matches the defined event pattern. EventBridge sends the event to the specified target.

Schedule  
A rule that runs on a schedule

# 設定EventBridge



Amazon EventBridge > Rules > Create rule

Step 4 - optional  
Configure tags

Step 5  
Review and create

cole-s3-usage-test2  
Maximum of 64 characters consisting of numbers, lower/upper case letters, .,-,\_.

Description - optional  
Enter description

Event bus | Info  
Select the event bus this rule applies to, either the default event bus or a custom or partner event bus.  
default

Enable the rule on the selected event bus

Rule type | Info  
 Rule with an event pattern  
A rule that runs when an event matches the defined event pattern.  
EventBridge sends the event to the specified target.

Schedule  
A rule that runs on a schedule  
[無標題]

**EventBridge Scheduler - A new AWS scheduling capability! New**  
A new EventBridge scheduling functionality that provides one-time and recurring scheduling functionality independent of Event buses and rules.  
You can create a schedule to invoke targets such as a Lambda function. [Learn More ↗](#)

**Continue to create rule** (highlighted) Cancel Continue in EventBridge Scheduler

# 設定EventBridge



Amazon EventBridge > Rules > Create rule

Amazon EventBridge

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Step 1 Define rule detail

Step 2 Define schedule

Step 3 Select target(s)

Step 4 - optional Configure tags

Step 5 Review and create

## Define schedule Info

### Schedule pattern

Choose the schedule type that best meets your needs.

A fine-grained schedule that runs at a specific time, such as 8:00 a.m. PST on the first Monday of every month.

A schedule that runs at a regular rate, such as every 10 minutes.

#### Cron expression Info

Define the cron expression for the schedule

cron ( minutes hours day of month month day of week year )

Minutes Hours Day of month Month Day of week Year

Next 10 trigger date(s)

*Scheduled dates will be generated here upon receiving a valid cron expression*

設定觸發條件

[Cancel](#) [Previous](#) [Next](#)

# 設定EventBridge



Amazon EventBridge > Rules > Create rule

Define rule detail

Step 2 Define schedule

Step 3 Select target(s)

Step 4 - optional Configure tags

Step 5 Review and create

Define schedule Info

Schedule pattern

Schedule pattern

Choose the schedule type that best meets your needs.

A fine-grained schedule that runs at a specific time, such as 8:00 a.m. PST on the first Monday of every month.

A schedule that runs at a regular rate, such as every 10 minutes.

Cron expression | Info

Define the cron expression for the schedule

cron ( 0 0 1 \* ? \*)

Minutes Hours Day of month Month Day of week Year

Next 10 trigger date(s) Local time zone ▾

Mon, Dec 1, 2025, 08:00 AM GMT+8  
Thu, Jan 1, 2026, 08:00 AM GMT+8  
Sun, Feb 1, 2026, 08:00 AM GMT+8  
Sun, Mar 1, 2026, 08:00 AM GMT+8  
Wed, Apr 1, 2026, 08:00 AM GMT+8  
Fri, May 1, 2026, 08:00 AM GMT+8  
Mon, Jun 1, 2026, 08:00 AM GMT+8  
Wed, Jul 1, 2026, 08:00 AM GMT+8  
Sat, Aug 1, 2026, 08:00 AM GMT+8  
Tue, Sep 1, 2026, 08:00 AM GMT+8

這邊的範例是每個月的1號會觸發

參考文件

GrandTechCloudServices

# 設定EventBridge



Amazon EventBridge > Rules > Create rule

Amazon EventBridge

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Step 2 Define schedule

Step 3 Select target(s)

Step 4 - optional Configure tags

Step 5 Review and create

**i Permissions**  
Note: When using the EventBridge console, EventBridge will automatically configure the proper permissions for the selected targets. If you're using the AWS CLI, SDK, or CloudFormation, you'll need to configure the proper permissions.

**Target 1**

**Target types**  
Select an EventBridge event bus, EventBridge API destination (SaaS partner), or another AWS service as a target.

EventBridge event bus

EventBridge API destination

AWS service

Select a target | Info  
Select target(s) to invoke when an event matches your event pattern or when schedule is triggered (limit of 5 targets per rule)

Lambda function

**Target location**

Target in this account

Target in another AWS account

**Function**

cole-s3-usage-test2

# 設定EventBridge



Amazon EventBridge > Rules > Create rule

Amazon EventBridge

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Function

cole-s3-usage-test2

▶ Configure version/alias

Permissions

Use execution role (recommended)

Execution role

EventBridge needs permission to send events to the target specified above. By continuing, you are allowing us to do so. [EventBridge and AWS Identity and Access Management](#)

Create a new role for this specific resource

Use existing role

Role name

Amazon\_EventBridge\_Invoke\_Lambda\_1644256011

▶ Additional settings

Add another target

Cancel

Skip to Review and create

Previous

Next

# 設定EventBridge



Amazon EventBridge > Rules > Create rule

Amazon EventBridge

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  - Schedules

Step 1 Define rule detail

Step 2 Define schedule

Step 3 Select target(s)

Step 4 - optional Configure tags

Step 5 Review and create

## Configure tags - optional Info

**Tags**

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

No tags associated with the resource.

Add new tag

You can add 50 more tags

Cancel Previous Next

# 設定EventBridge



Amazon EventBridge > Rules > Create rule

Amazon EventBridge

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cole-s3-usage-test2

Lambda function

arn:aws:lambda:us-east-1:0271  
55467263:function:cole-s3-usage-test2

Matched event

Amazon\_EventBridge\_Invoke\_Lambda\_1644256011

Input to target: Matched event

Additional parameters: --

Dead-letter queue (DLQ): -

Step 4: Configure tag(s) Edit

Tags (0)

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key	Value
No tags associated with this resource.	

Cancel Previous Create rule

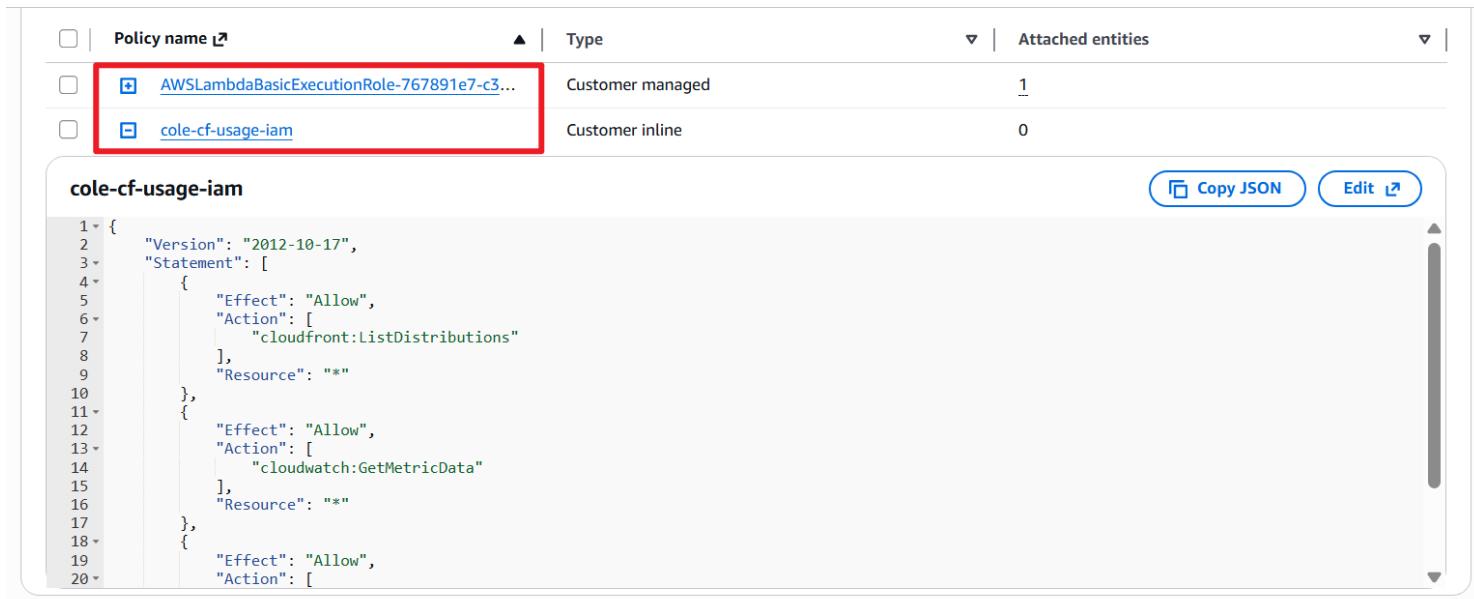
這樣就設定完成了，每個月1號會觸發Lambda去CloudWatch抓資料，並發佈到SNS，由SNS發信到用戶端



# CF 自動化寄送設定

CloudFront的設定步驟跟S3完全一致，可依需求看要不要建立不同的SNS Topic(也可使用同一個)。  
其他差在Lambda的程式碼及IAM的部分，因其他步驟都相同，故不再重複。

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "cloudfront>ListDistributions"
      ],
      "Resource": "*"
    },
    {
      "Effect": "Allow",
      "Action": [
        "cloudwatch:GetMetricData"
      ],
      "Resource": "*"
    },
    {
      "Effect": "Allow",
      "Action": [
        "sns:Publish"
      ],
      "Resource": "*"
    }
  ]
}
```



**CF的Lambda只需要預設的policy以及左側的policy**

1. 紿予 list CF Distributions 權限
2. 紿予抓取CloudWatch metrics 權限
3. 發佈到SNS

The screenshot shows the AWS Lambda Code Source interface. On the left, the Explorer sidebar displays a project structure with a folder 'COLE-CF-USAGE-TEST' containing a file 'lambda\_function.py'. Below it is a 'DEPLOY' section with 'Deploy (Ctrl+Shift+U)' and 'Test (Ctrl+Shift+I)' buttons. At the bottom, there's a 'TEST EVENTS [SELECTED: TEST]' section with 'Create new test event' and 'Private saved events' options. The main area is a code editor titled 'lambda\_function.py' with the following content:

```
1 import boto3
2 import datetime
3 from zoneinfo import ZoneInfo
4 from botocore.config import Config
5
6 # ----- 設定 -----
7 SNS_TOPIC_ARN = 'arn:aws:sns:us-east-1:027155467263:cole-cf-usage-test1'
8 AWS_REGION = 'us-east-1' # CloudFront metrics 都在 us-east-1 + Region=Global
9 TZ = ZoneInfo("Asia/Taipei") # 台灣時間
10 #
```

Below the code editor, tabs for PROBLEMS, OUTPUT, CODE REFERENCE LOG, and TERMINAL are visible. The status bar shows 'Status: Succeeded' and 'Test Event Name: test'. A 'Response:' section shows a JSON object:

```
{
  "ok": true,
  "dists": 3,
  "start_utc": "2025-10-31T16:00:00+00:00",
```

跟S3一樣，寫好程式碼並部署後，進行測試

## CloudFront 當月用量報表 ( 台北時間 ) - 2025-11



AWS Notifications <no-reply@sns.amazonaws.com>  
收件者 Cole Lin - GCS

將郵件翻譯為: 繁體中文 (繁體) | 一律不翻譯自: 英文 | [翻譯喜好設定](#)

...

 CloudFront 當月用量報表 ( 台北時間 )

月份 : 2025-11

區間 ( 台北時間 ) : 2025-11-01 00:00:00 CST ~ 2025-11-07 15:00:00 CST

Distributions : 3

總 Requests : 11

總下載量 : 0.00 GB

dez39yd4ngysi.cloudfront.net (E1EXMLLF9J0KCB)

Requests : 11

Download : 0.00 GB

d3vwj1vp4d8lvk.cloudfront.net (E9UY06JOE3W6M)

Requests : 0

Download : 0.00 GB

d2km9pj7ae1xo5.cloudfront.net (E1DJLM3LDFYME2)

Requests : 0

Download : 0.00 GB

測試成功，接著按照S3那邊的步驟，設定好EventBridge，  
即可在每月定期自動發信

...



# Thank you

