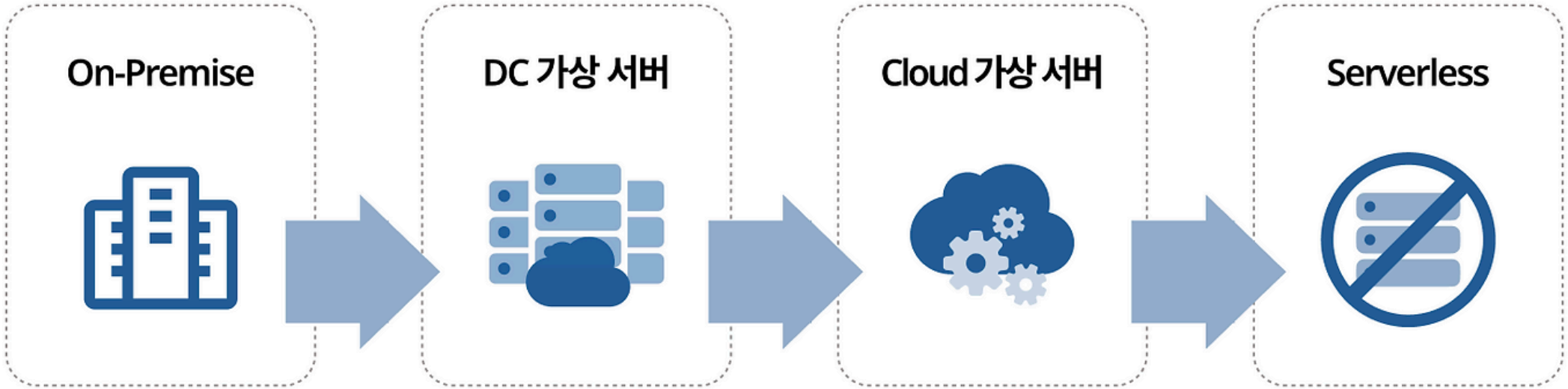
AWS Lambda

- Lambda는 AWS가 제공하는 서버리스 FaaS 솔루션으로, 함수의 인스턴스를 실행하여 이벤트를 처리합니다.
- AWS Lambda 요금

서버리스란?

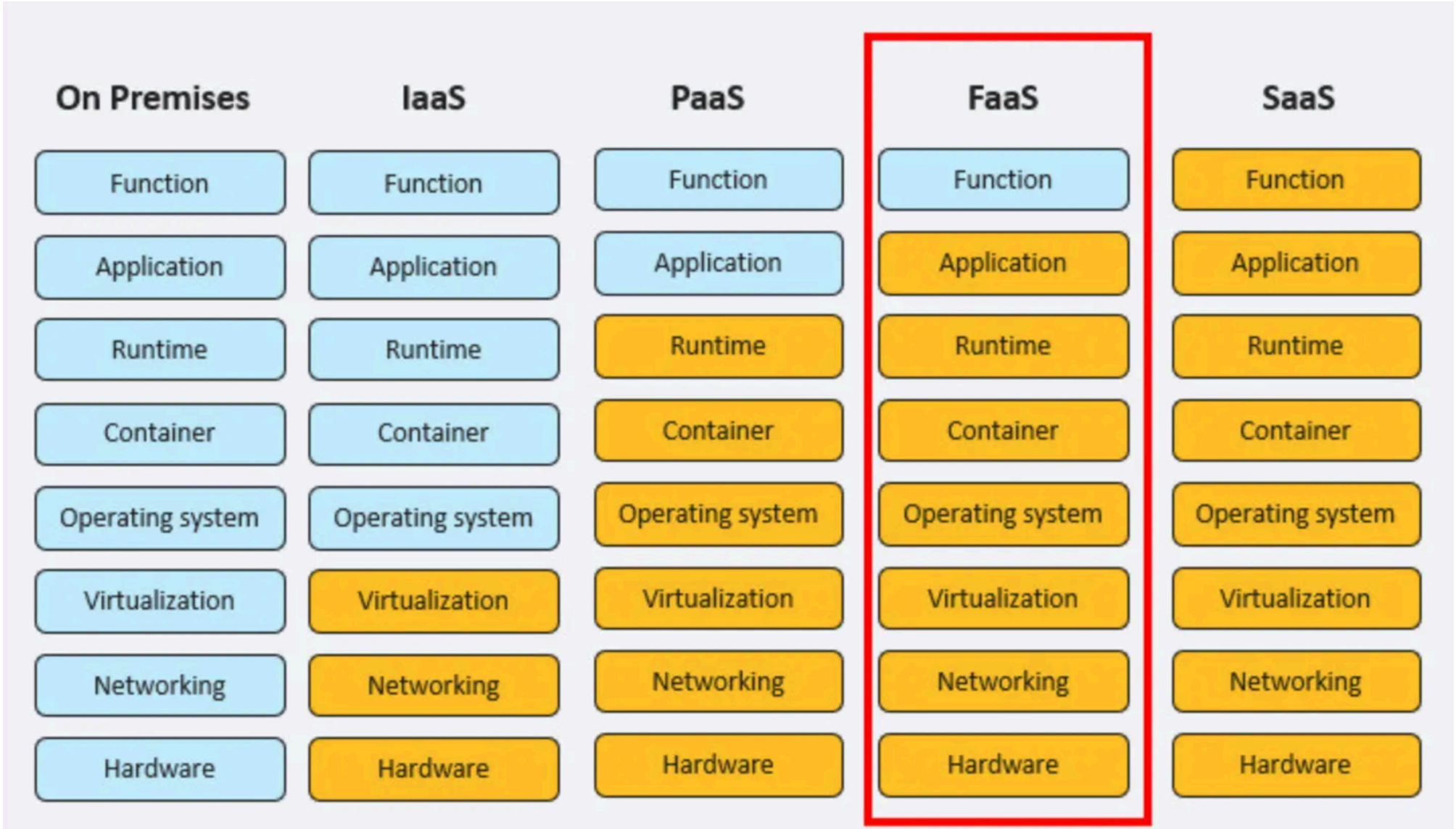
- 서버리스 컴퓨팅이란 서버의 설정과 관리 없이 백엔드 서비스를 운영할 수 있게 해주는 클라우드 컴퓨팅 실행 모델입니다.
- 사용자는 코드 작성에만 집중하고, 나머지 인프라 관리는 AWS가 담당하게 됩니다.
- 이는 개발자가 인프라에 대한 고민 없이, 더 빠르고 효율적으로 애플리케이션을 개발하고 배포할 수 있게 해줍니다.



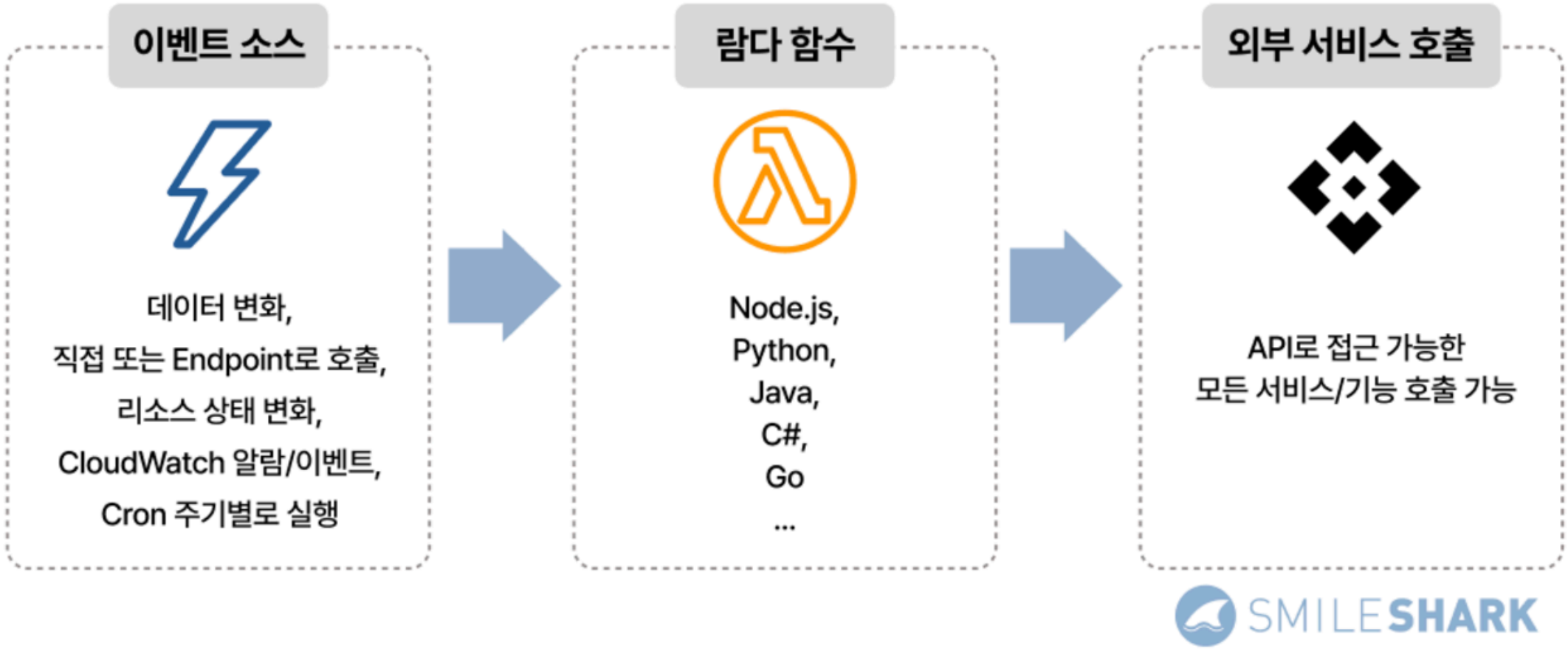
SMILESHARK

FaaS란?

- FaaS(Function-as-a-Service)는 개발자가 자체 인프라를 유지관리할 필요 없이 애플리케이션 패키지를 기능으로 빌드, 실행, 관리할 수 있게 해주는 일종의 클라우드 컴퓨팅 서비스입니다.
- FaaS 기능에는 특히 상태 및 실행 기간과 관련하여 상당한 아키텍처 제한이 있습니다.


On Premises
IaaS
PaaS
FaaS
SaaS
Function
Application
Runtime
Container
Operating system
Virtualization
Networking
Hardware

AWS Lambda의 작동 원리



람다 함수

- 함수는 Lambda에서 코드를 실행하기 위해 호출할 수 있는 리소스입니다.
- 함수에는 함수에 전달하는 이벤트 또는 다른 AWS서비스에서 보낸 이벤트를 처리하는 코드가 포함되어 있습니다.

이벤트 트리거(이벤트 소스)

- AWS Lambda는 이벤트를 처리하기 위해 함수 인스턴스를 실행합니다. 함수는 Lambda API를 사용하여 직접 호출할 수 있으며 AWS 서비스 및 리소스를 설정하여 함수를 호출할 수도 있습니다.
- AWS Lambda 함수는 HTTP 요청, 데이터 상태 번역, 파일 업로드 등 다양한 이벤트에 의해 트리거 됩니다.

람다의 작동 방식

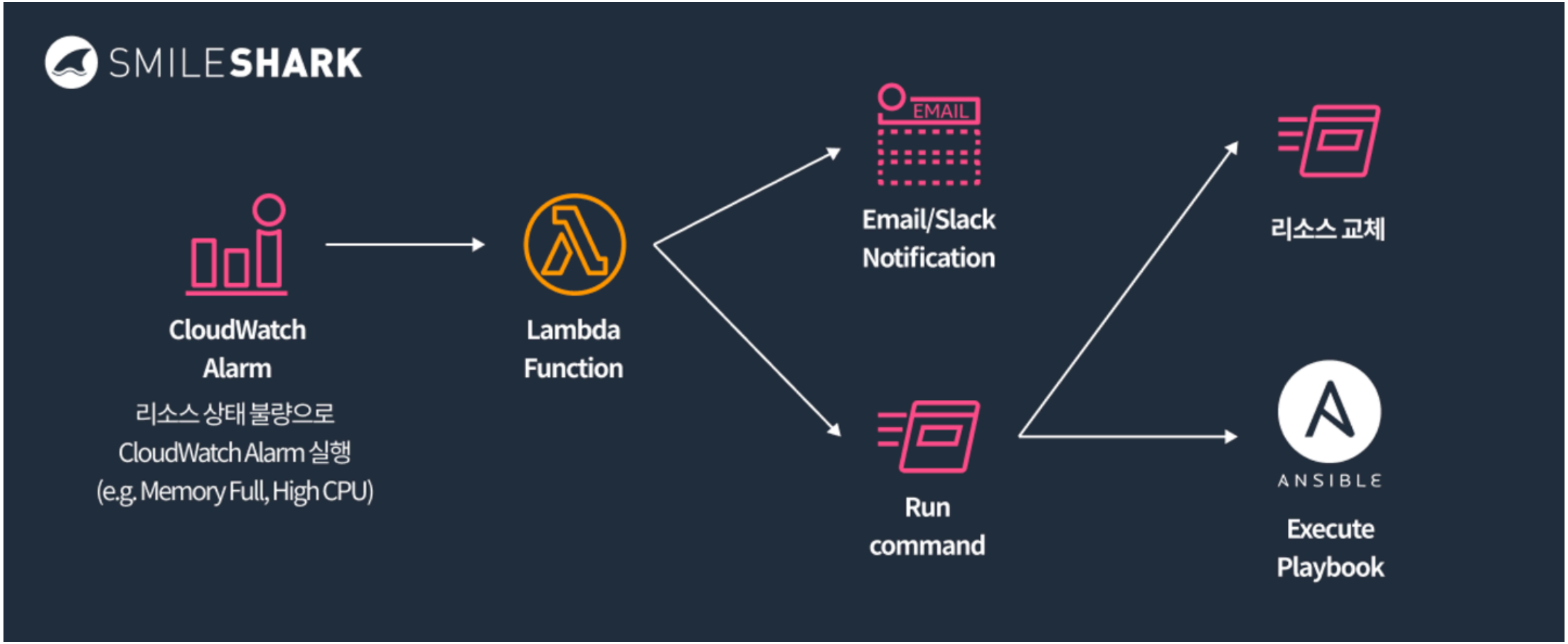
1. 먼저 함수를 생성하고, 해당 함수를 사용되는 프로그래밍 언어와 같은 기본 정보를 서비스에 추가합니다.
2. 그런 다음 람다 편집기에서 코드를 작성하거나 소스 코드를 zip 파일로 업로드합니다.
3. 람다 코드가 업로드되면 서비스가 모든 용량 확장, 패치 및 인프라 관리를 처리합니다.

AWS Lambda와 EC2의 차이점

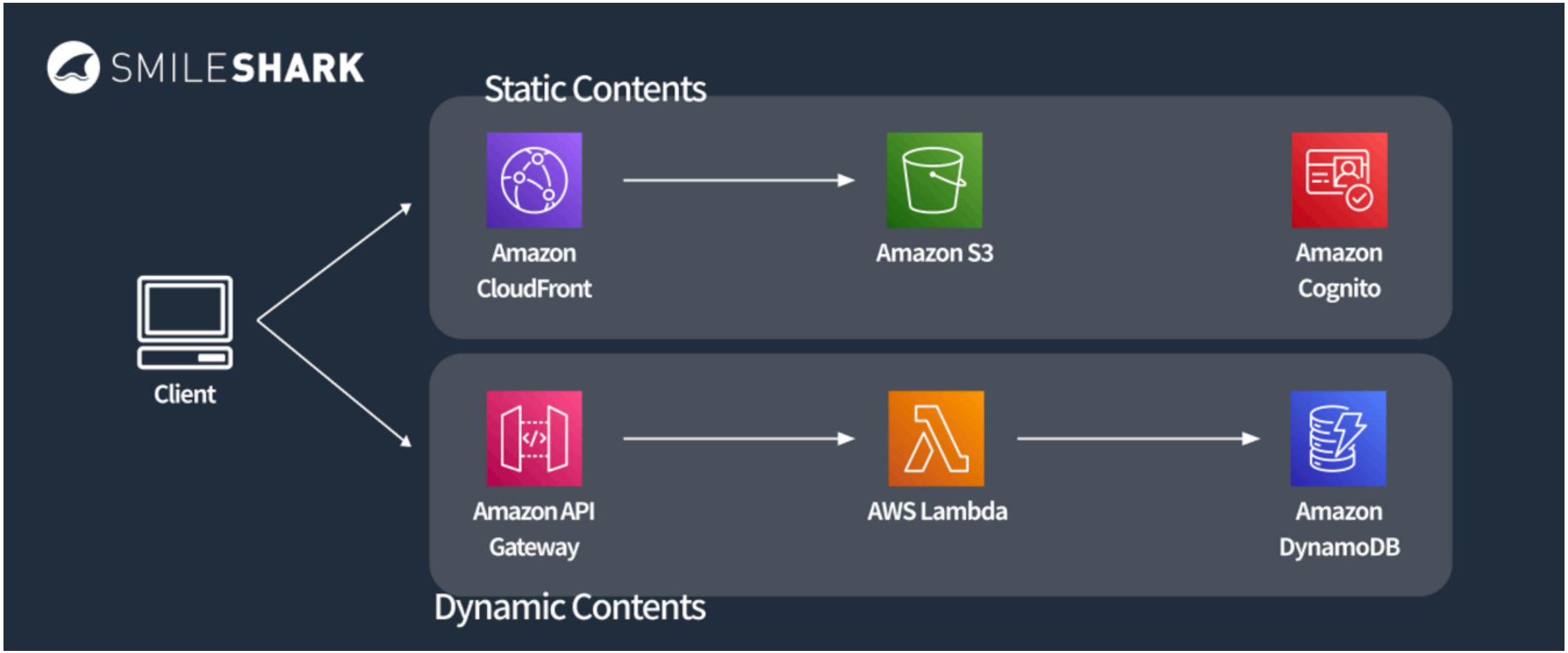
AWS Lambda	AWS EC2
백엔드 코드를 실행하고 실행하기 위한 원격 플랫폼을 갖춘 PaaS(Platform as a Service)	가상화된 컴퓨팅 리소스를 제공하는 IaaS(Infrastructure as a Service)
컴퓨팅 인스턴스에 로그인하고 맞춤형 운영체제 또는 언어 런타임을 선택할 수 있는 유연성이 없습니다	다양한 인스턴스, 맞춤형 운영 체제, 네트워크 및 보안 패치 등을 선택할 수 있는 유연성을 갖추고 있습니다
코드를 실행할 환경을 선택하고 코드를 AWS Lambda에 푸시합니다	처음에는 OS를 선택하고 필요한 모든 소프트웨어를 설치한 다음 코드를 EC2에 푸시해야 합니다
일부 언어에 대한 환경 제한이 있음	환경 제한 없음

AWS Lambda의 사용 사례

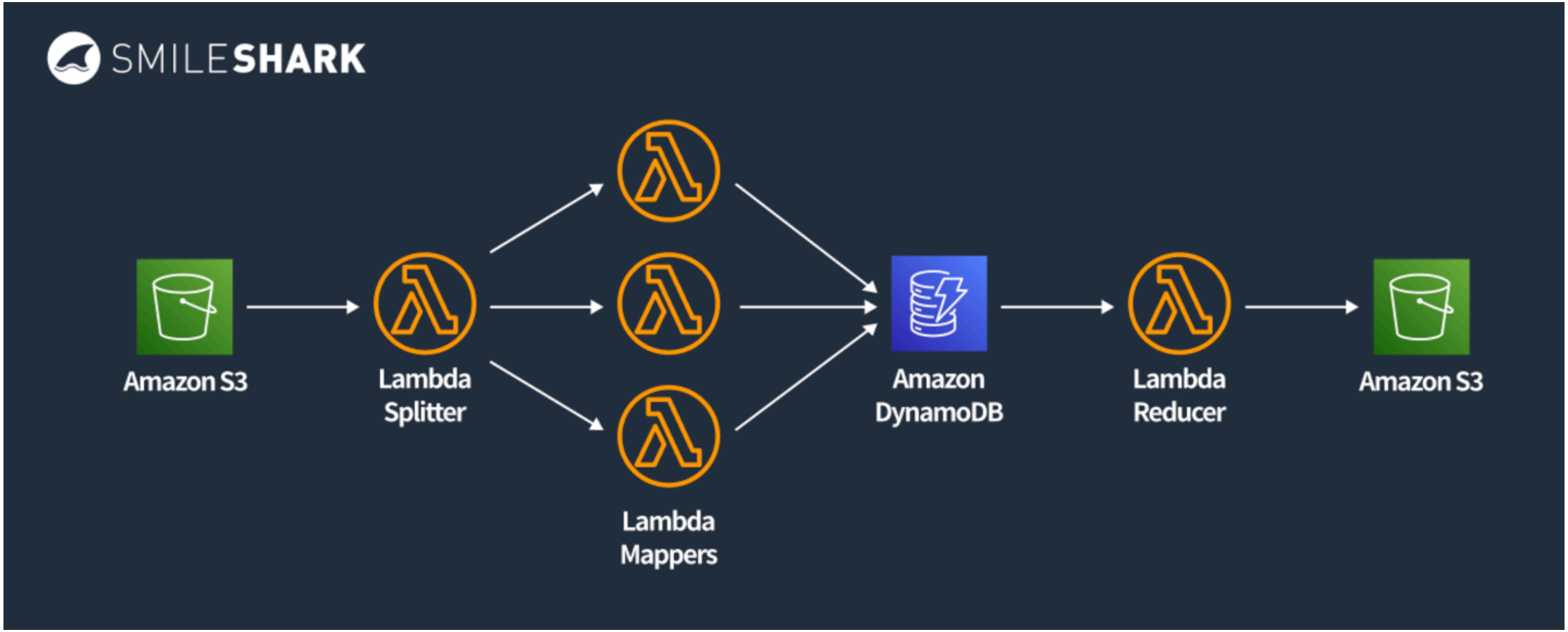
시스템 운영 자동화



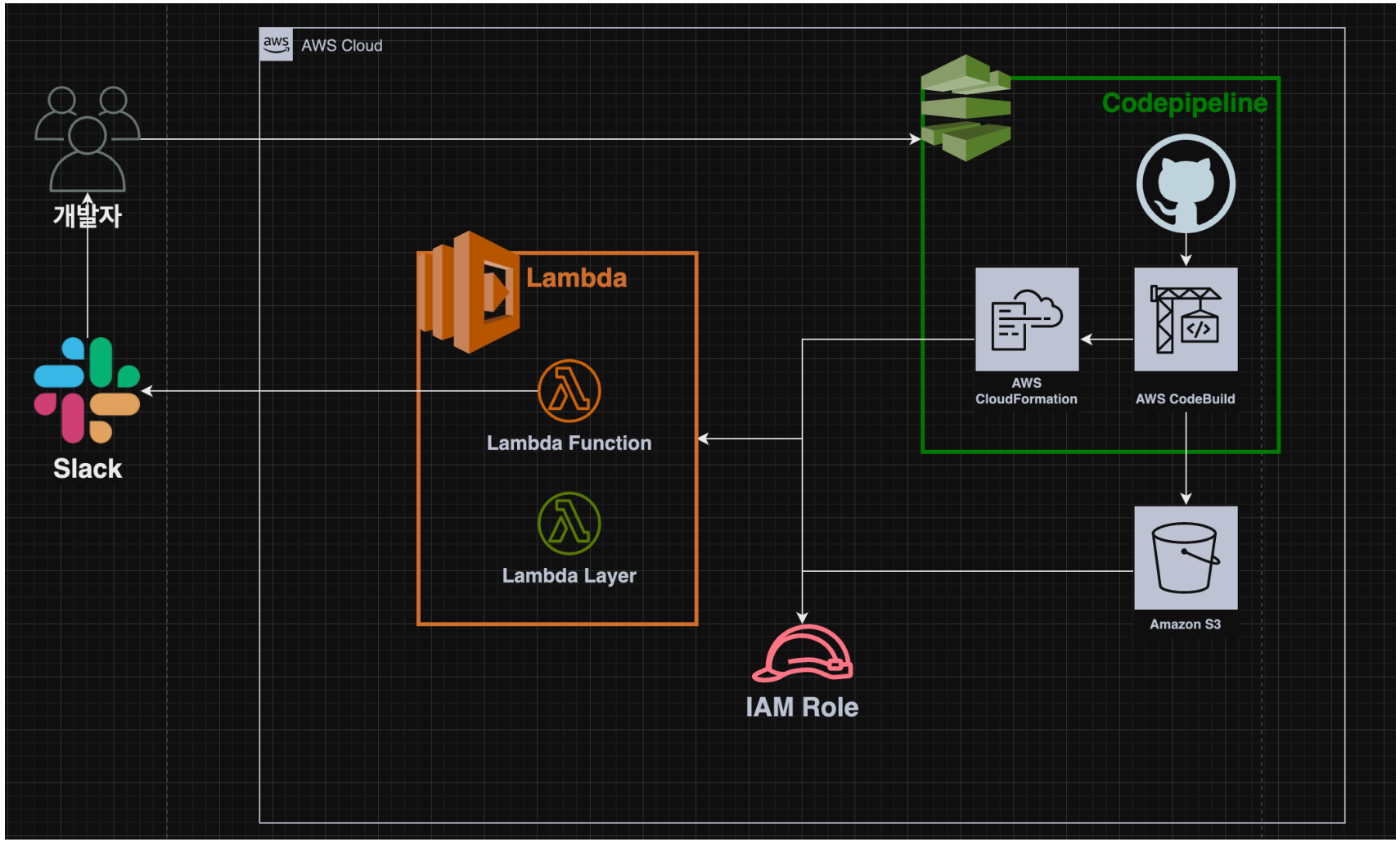
웹 애플리케이션


SMILESHARK
Static Contents
Amazon CloudFront
Amazon S3
Amazon Cognito
Client
Amazon API Gateway
AWS Lambda
Amazon DynamoDB
Dynamic Contents

Serverless Batch Processing

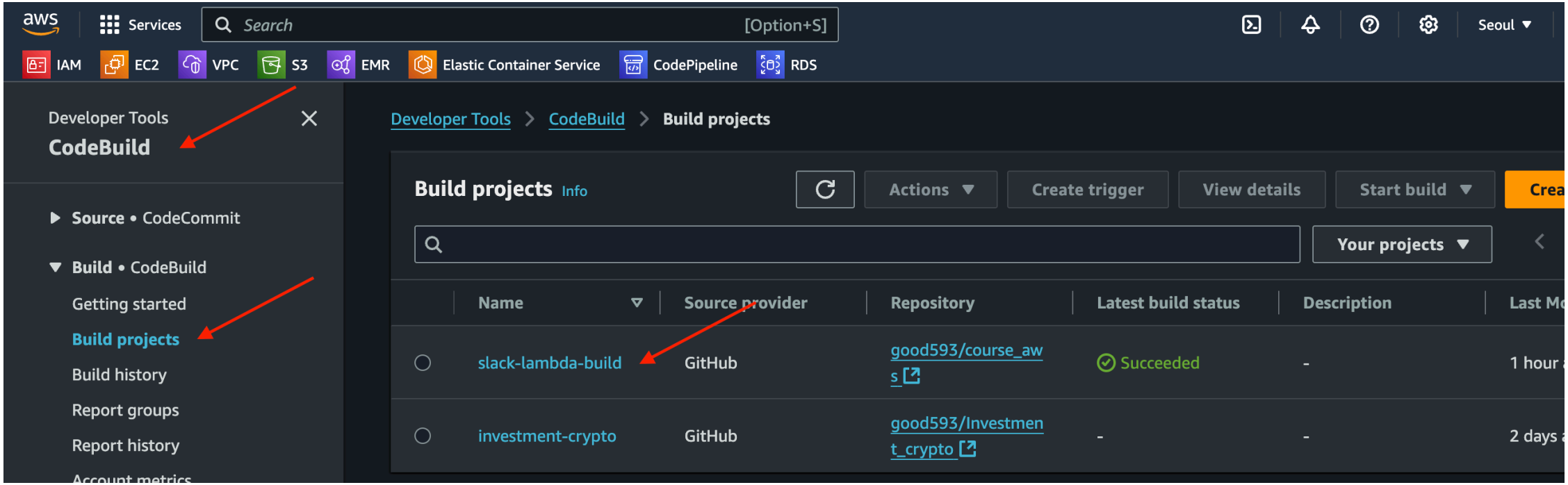


aws codepipeline

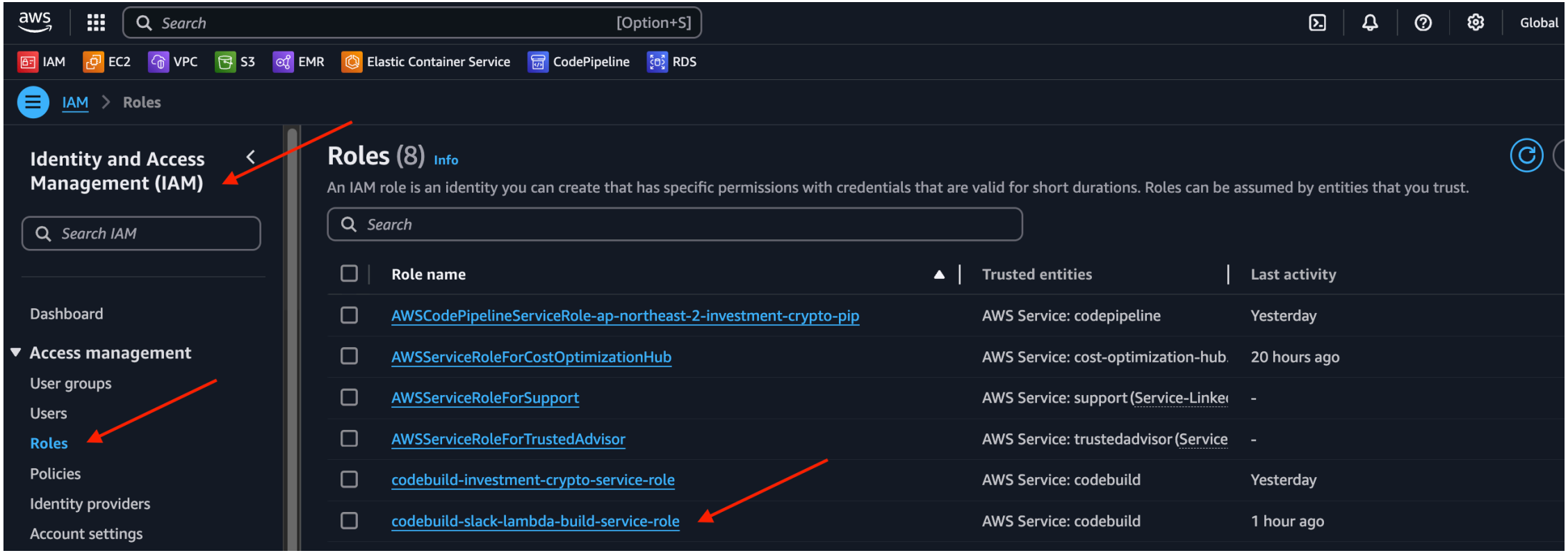


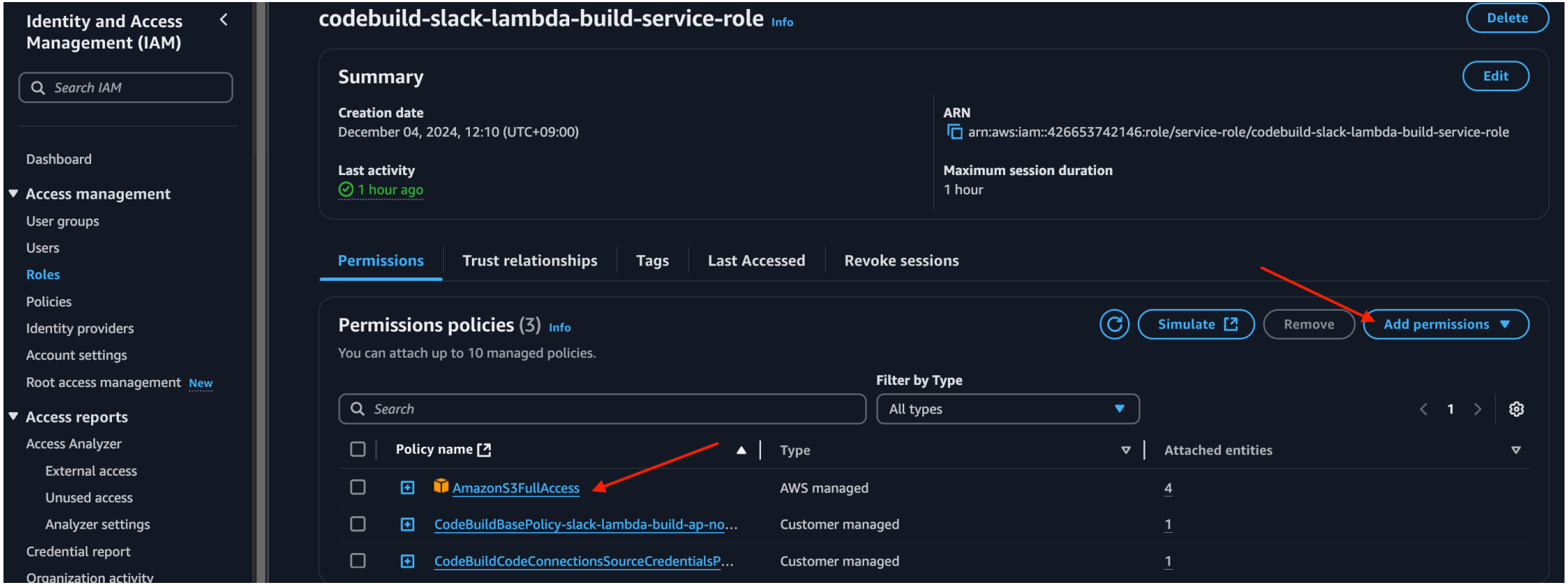
CodeBuild

단계1: CodeBuild 생성

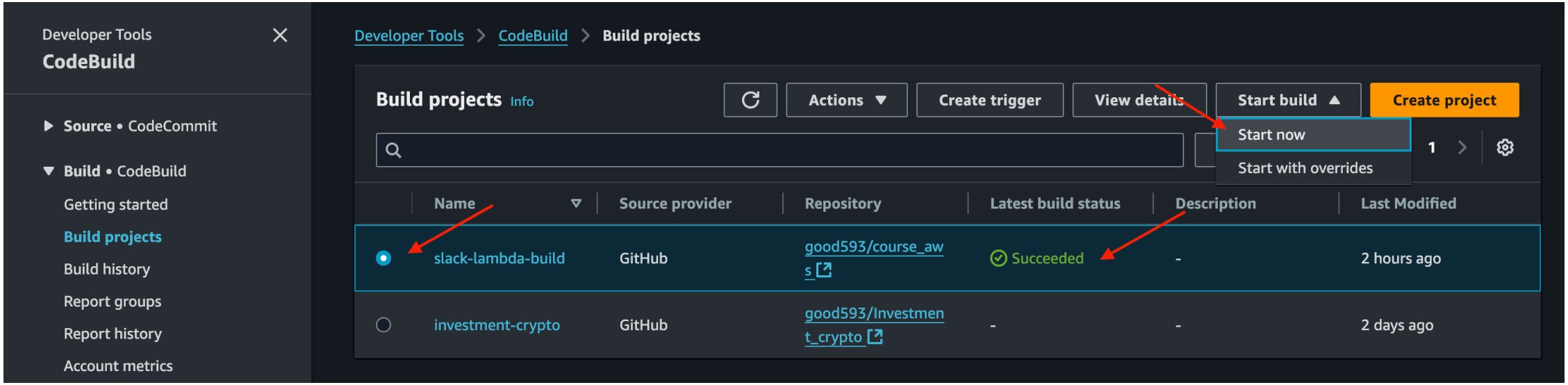


단계2: CodeBuild Role 권한 추가



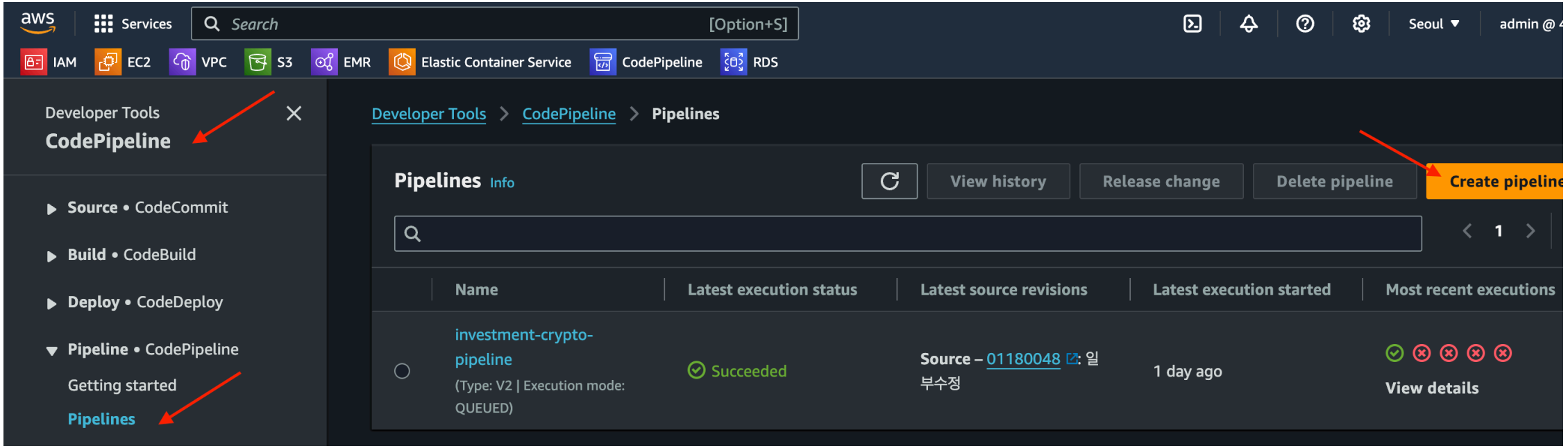

Identity and Access Management (IAM)
Search IAM
Dashboard
Access management
User groups
Users
Roles
Policies
Identity providers
Account settings
Root access management New
Access reports
Access Analyzer
External access
Unused access
Analyzer settings
Credential report
Organization activity
codebuild-slack-lambda-build-service-role Info
Delete
Summary
Edit
Creation date
December 04, 2024, 12:10 (UTC+09:00)
ARN
arn:aws:iam::426653742146:role/service-role/codebuild-slack-lambda-build-service-role
Last activity
1 hour ago
Maximum session duration
1 hour
Permissions
Trust relationships
Tags
Last Accessed
Revoke sessions
Permissions policies (3) Info
You can attach up to 10 managed policies.
Simulate
Remove
Add permissions
Filter by Type
Search
All types
1
Policy name
Type
Attached entities
AmazonS3FullAccess
AWS managed
4
CodeBuildBasePolicy-slack-lambda-build-ap-no...
Customer managed
1
CodeBuildCodeConnectionsSourceCredentialsP...
Customer managed
1

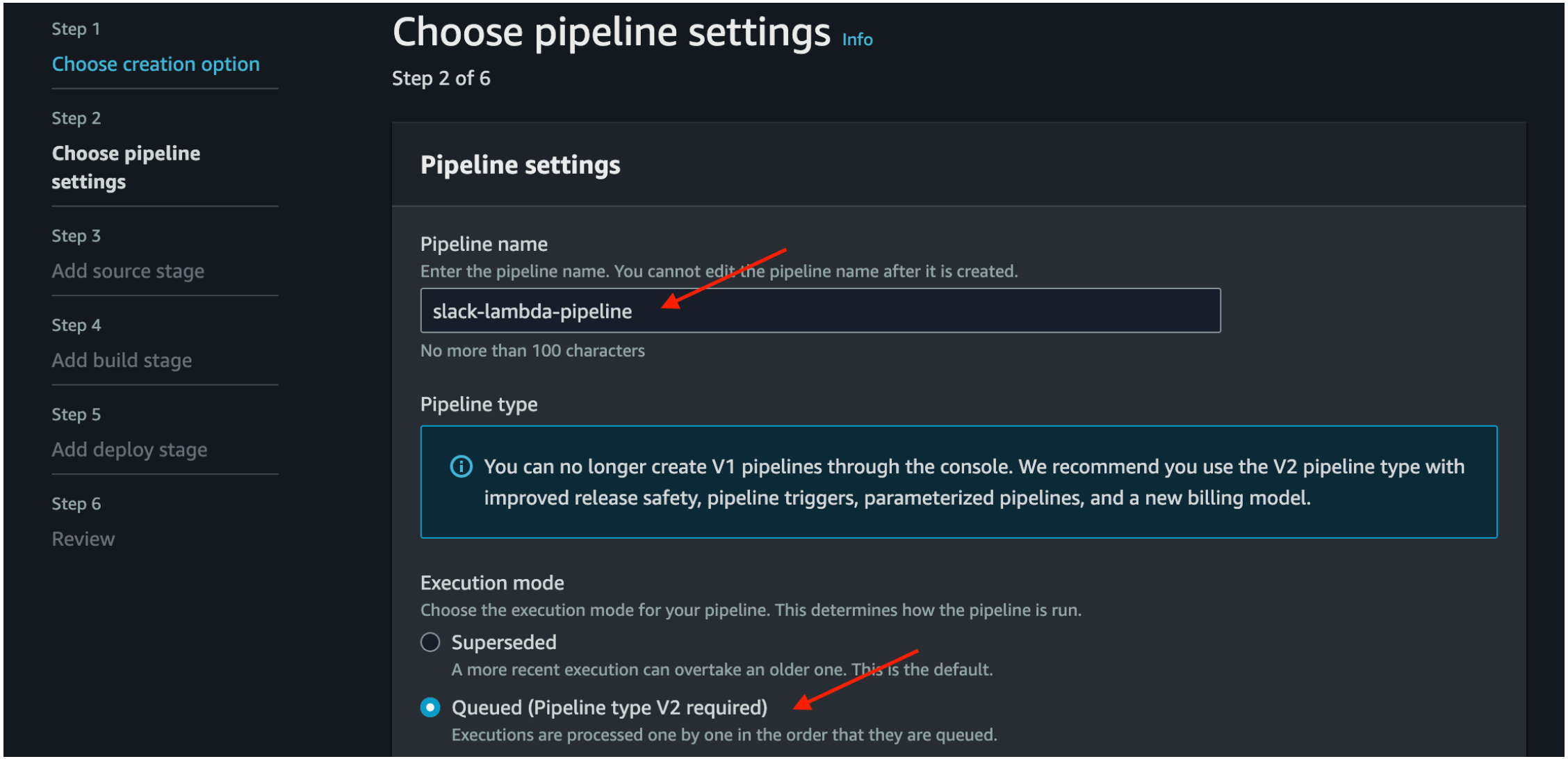
단계3: CodeBuild 실행

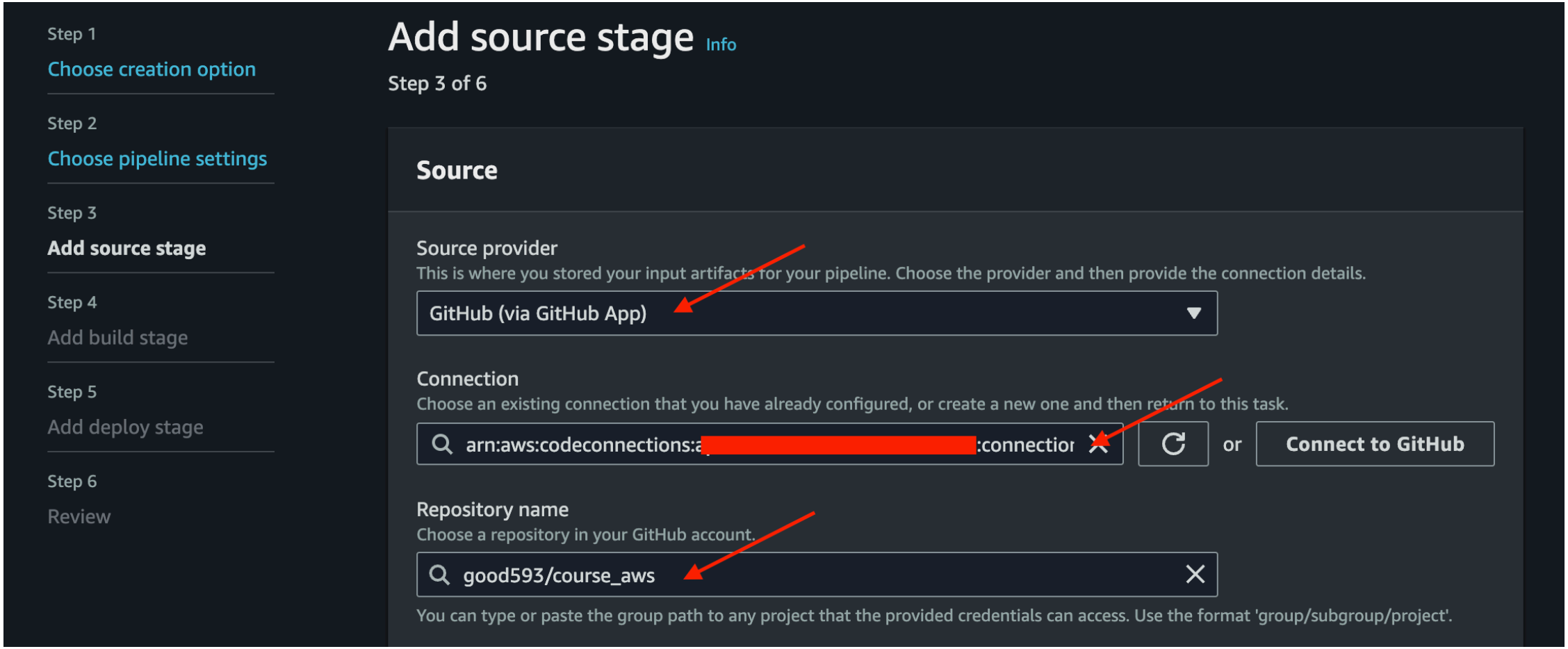


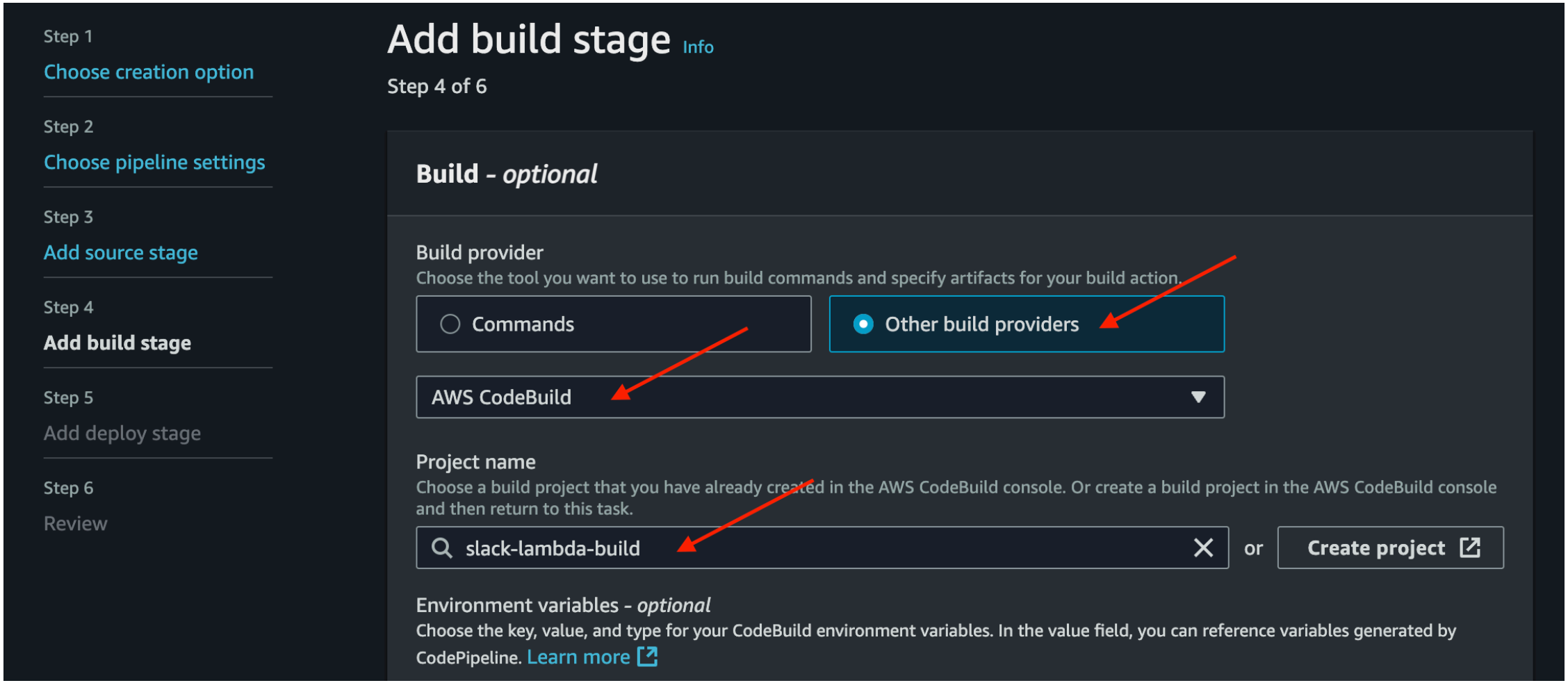
CodePipeline

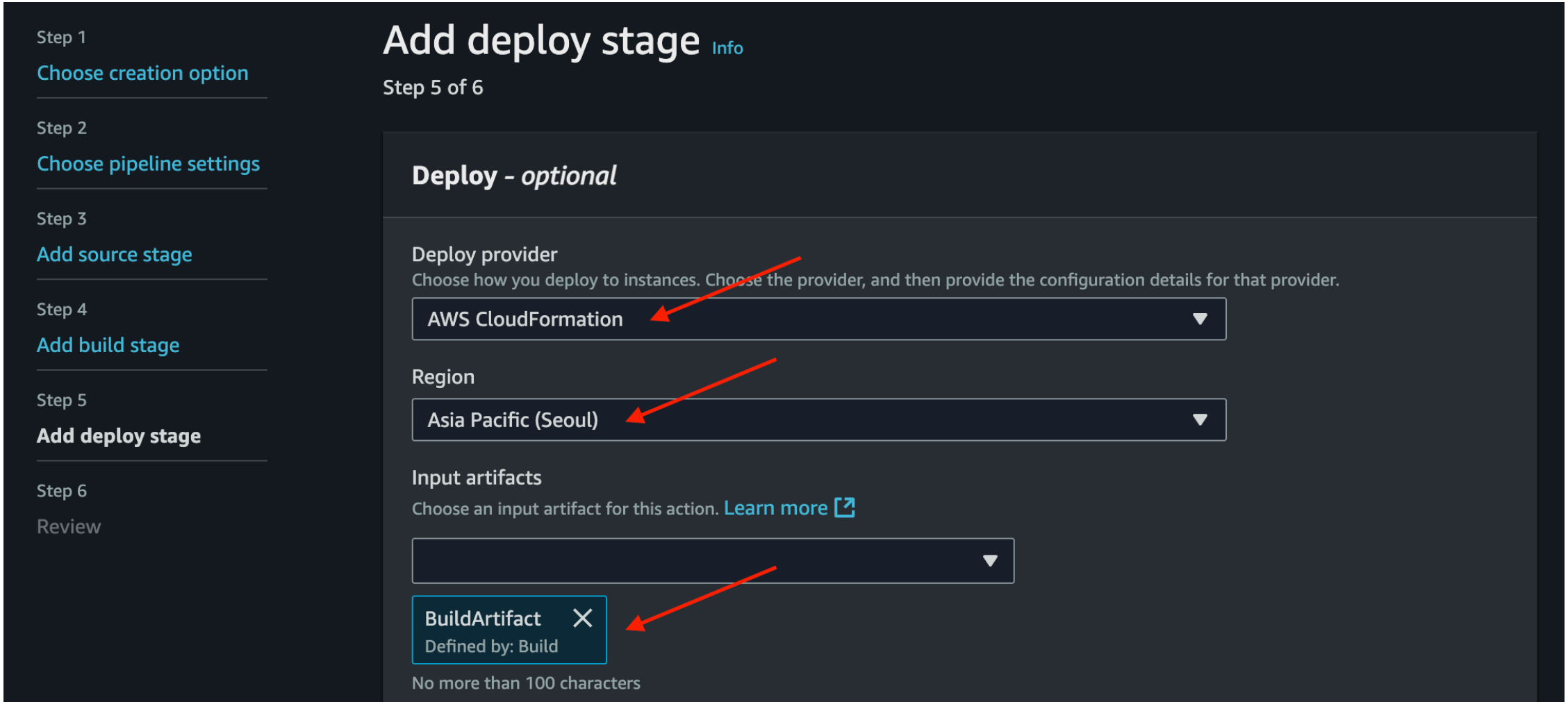
단계1: CodePipeline 생성 및 실행

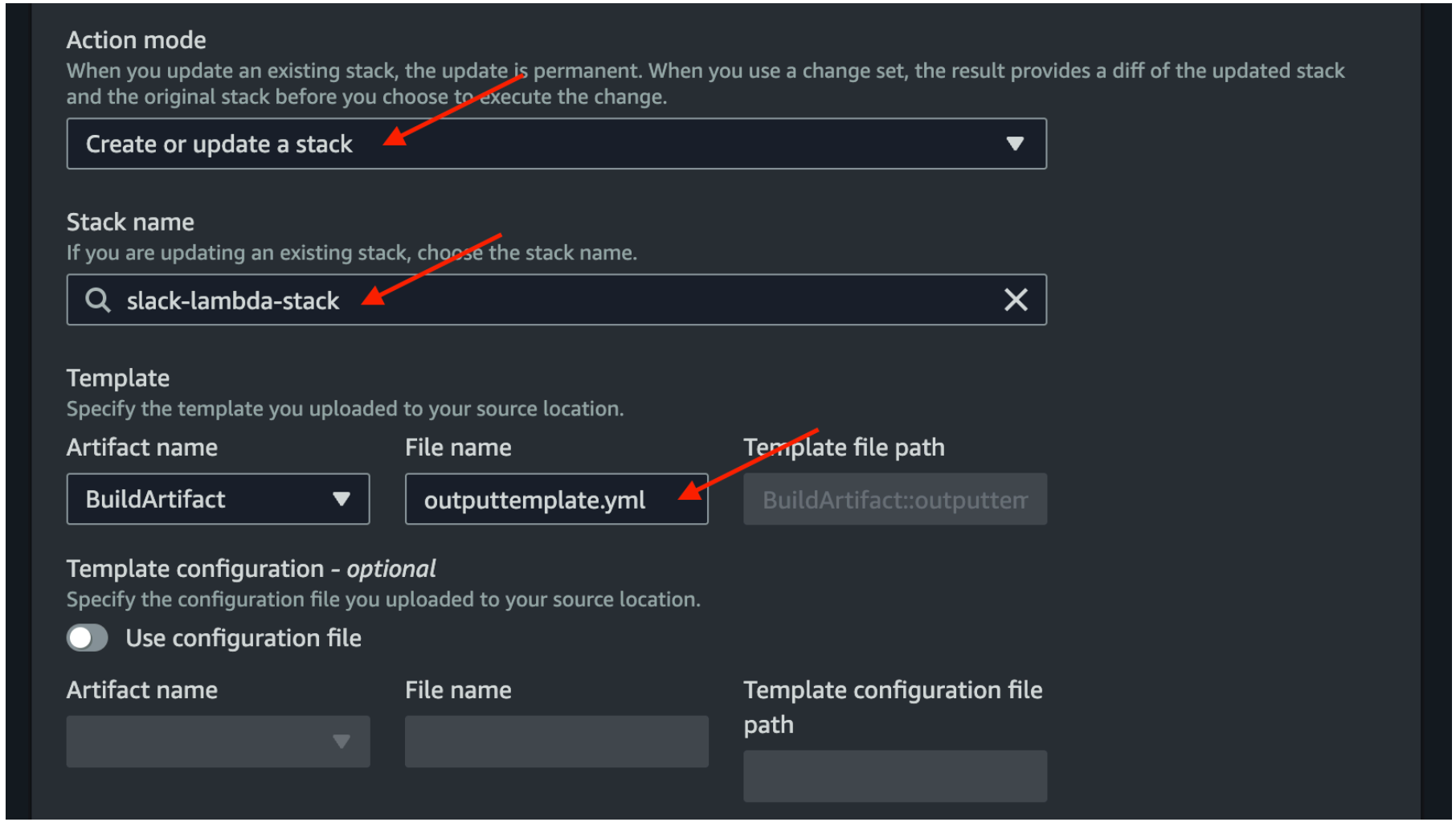


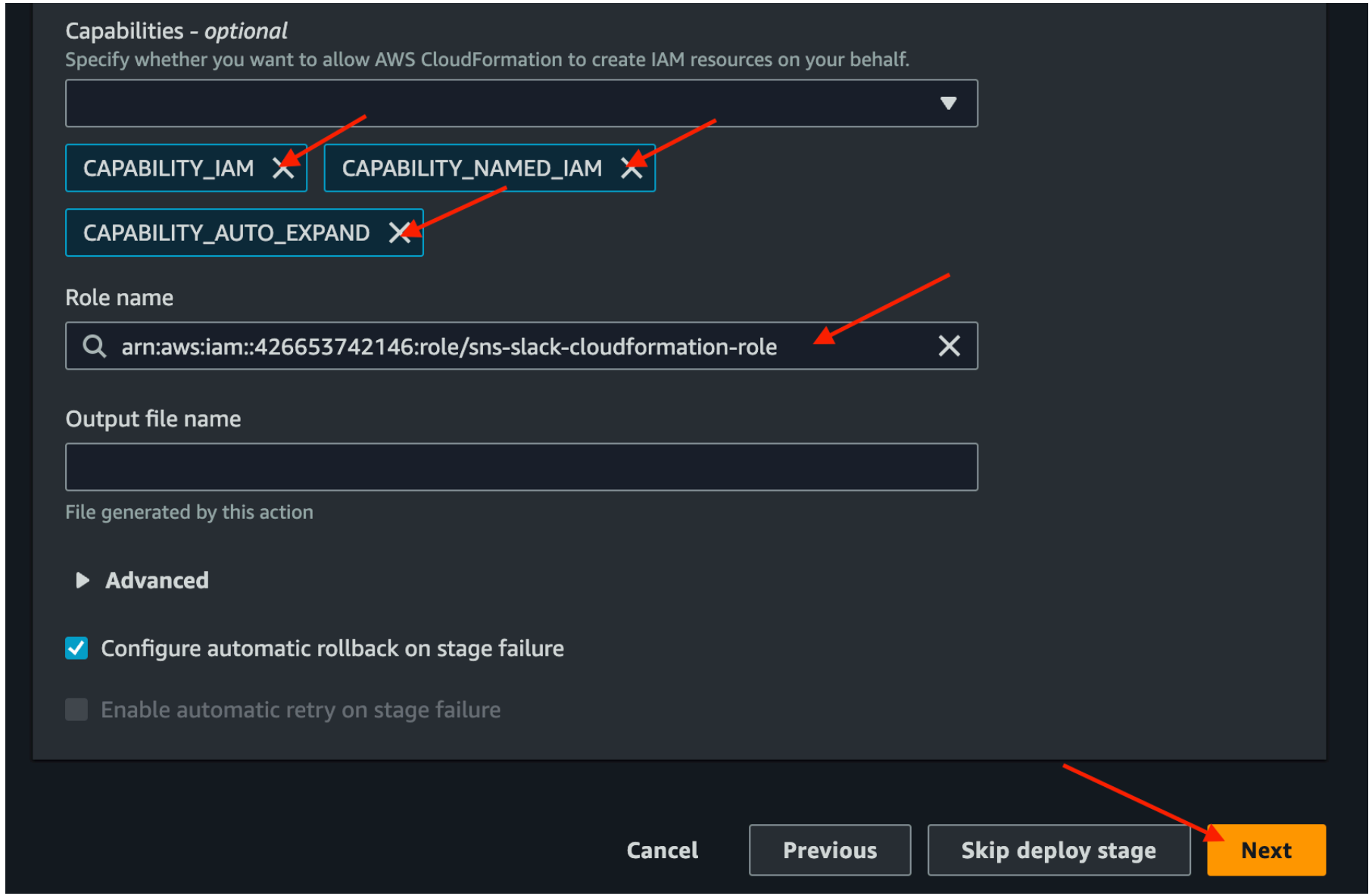

Step 1
Choose creation option
Step 2
Choose pipeline settings
Step 3
Add source stage
Step 4
Add build stage
Step 5
Add deploy stage
Step 6
Review
Choose pipeline settings Info
Step 2 of 6
Pipeline settings
Pipeline name
Enter the pipeline name. You cannot edit the pipeline name after it is created.
slack-lambda-pipeline
No more than 100 characters
Pipeline type
You can no longer create V1 pipelines through the console. We recommend you use the V2 pipeline type with improved release safety, pipeline triggers, parameterized pipelines, and a new billing model.
Execution mode
Choose the execution mode for your pipeline. This determines how the pipeline is run.
Superseded
A more recent execution can overtake an older one. This is the default.
Queued (Pipeline type V2 required)
Executions are processed one by one in the order that they are queued.


Step 1
Choose creation option
Step 2
Choose pipeline settings
Step 3
Add source stage
Step 4
Add build stage
Step 5
Add deploy stage
Step 6
Review
Add source stage Info
Step 3 of 6
Source
Source provider
This is where you stored your input artifacts for your pipeline. Choose the provider and then provide the connection details.
GitHub (via GitHub App)
Connection
Choose an existing connection that you have already configured, or create a new one and then return to this task.
arn:aws:codeconnections:a
:connectior
or
Connect to GitHub
Repository name
Choose a repository in your GitHub account.
good593/course_aws
You can type or paste the group path to any project that the provided credentials can access. Use the format 'group/subgroup/project'.

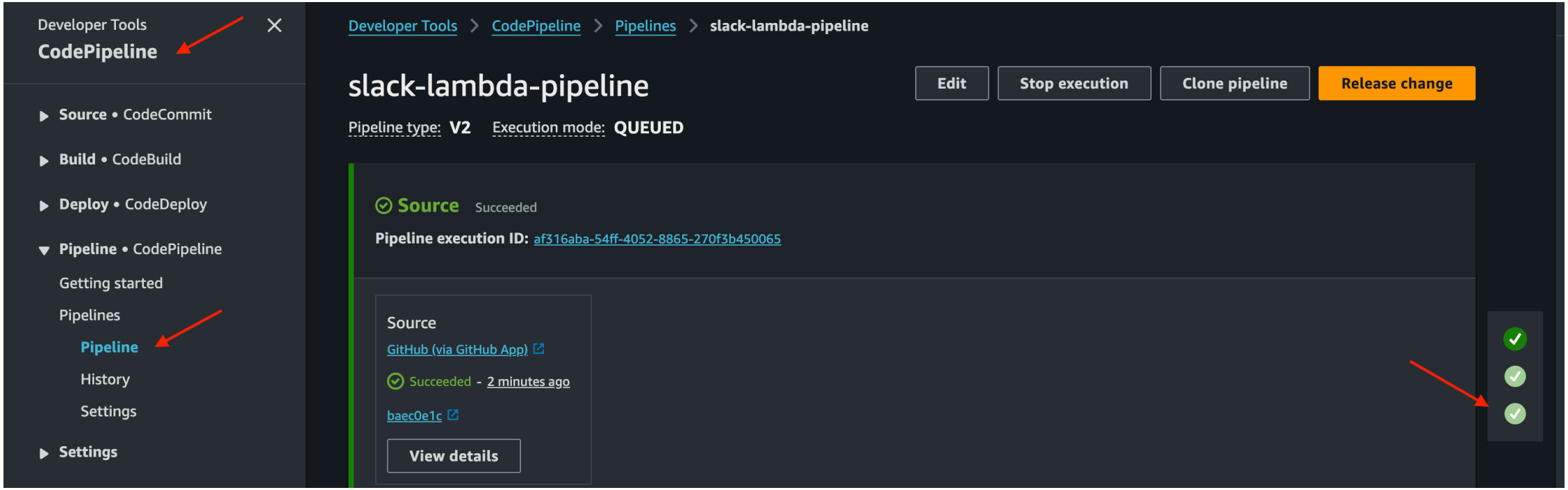

Step 1
Choose creation option
Step 2
Choose pipeline settings
Step 3
Add source stage
Step 4
Add build stage
Step 5
Add deploy stage
Step 6
Review
Add build stage Info
Step 4 of 6
Build - optional
Build provider
Choose the tool you want to use to run build commands and specify artifacts for your build action.
Commands
Other build providers
AWS CodeBuild
Project name
Choose a build project that you have already created in the AWS CodeBuild console. Or create a build project in the AWS CodeBuild console and then return to this task.
slack-lambda-build
or
Create project
Environment variables - optional
Choose the key, value, and type for your CodeBuild environment variables. In the value field, you can reference variables generated by CodePipeline. Learn more


Step 1
Choose creation option
Step 2
Choose pipeline settings
Step 3
Add source stage
Step 4
Add build stage
Step 5
Add deploy stage
Step 6
Review
Add deploy stage Info
Step 5 of 6
Deploy - optional
Deploy provider
Choose how you deploy to instances. Choose the provider, and then provide the configuration details for that provider.
AWS CloudFormation
Region
Asia Pacific (Seoul)
Input artifacts
Choose an input artifact for this action. Learn more
BuildArtifact
Defined by: Build
No more than 100 characters

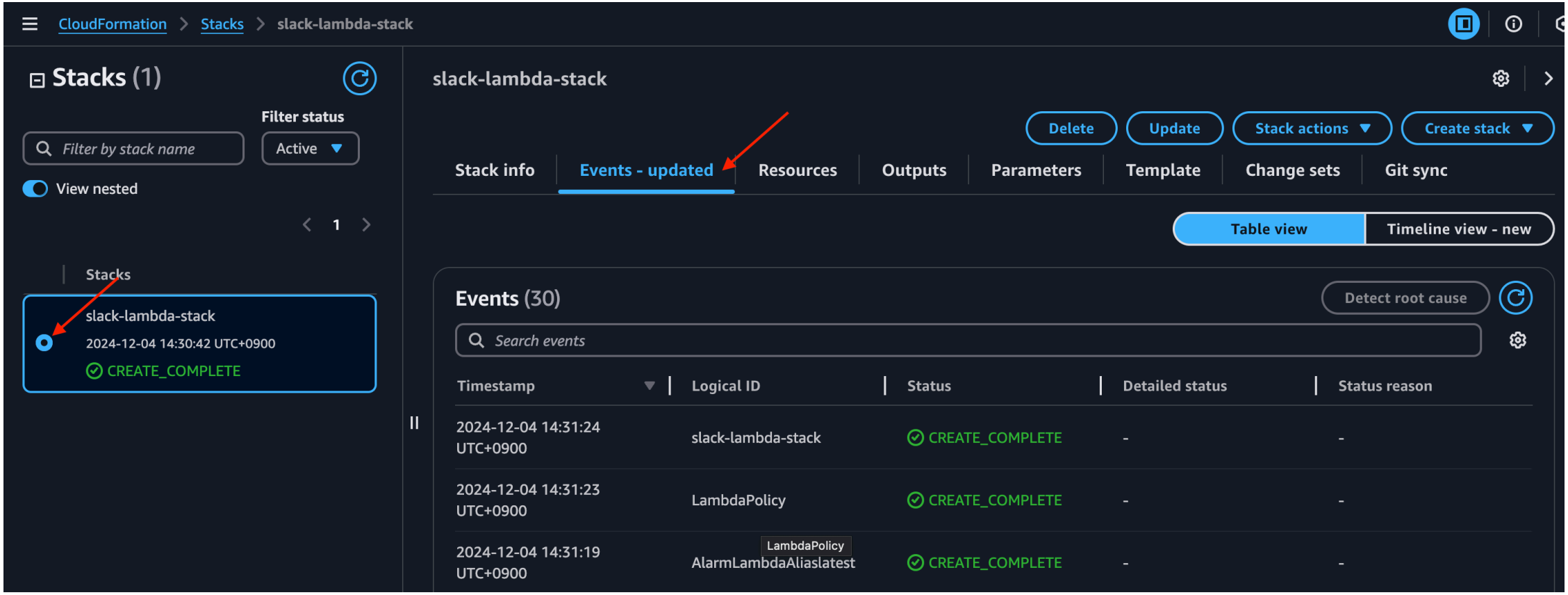

Action mode
When you update an existing stack, the update is permanent. When you use a change set, the result provides a diff of the updated stack and the original stack before you choose to execute the change.
Create or update a stack
Stack name
If you are updating an existing stack, choose the stack name.
slack-lambda-stack
Template
Specify the template you uploaded to your source location.
Artifact name
BuildArtifact
File name
outputtemplate.yml
Template file path
BuildArtifact::outputtem
Template configuration - optional
Specify the configuration file you uploaded to your source location.
Use configuration file
Artifact name
File name
Template configuration file path


Capabilities - optional
Specify whether you want to allow AWS CloudFormation to create IAM resources on your behalf.
CAPABILITY_IAM
CAPABILITY_NAMED_IAM
CAPABILITY_AUTO_EXPAND
Role name
arn:aws:iam::426653742146:role/sns-slack-cloudformation-role
Output file name
File generated by this action
Advanced
Configure automatic rollback on stage failure
Enable automatic retry on stage failure
Cancel
Previous
Skip deploy stage
Next

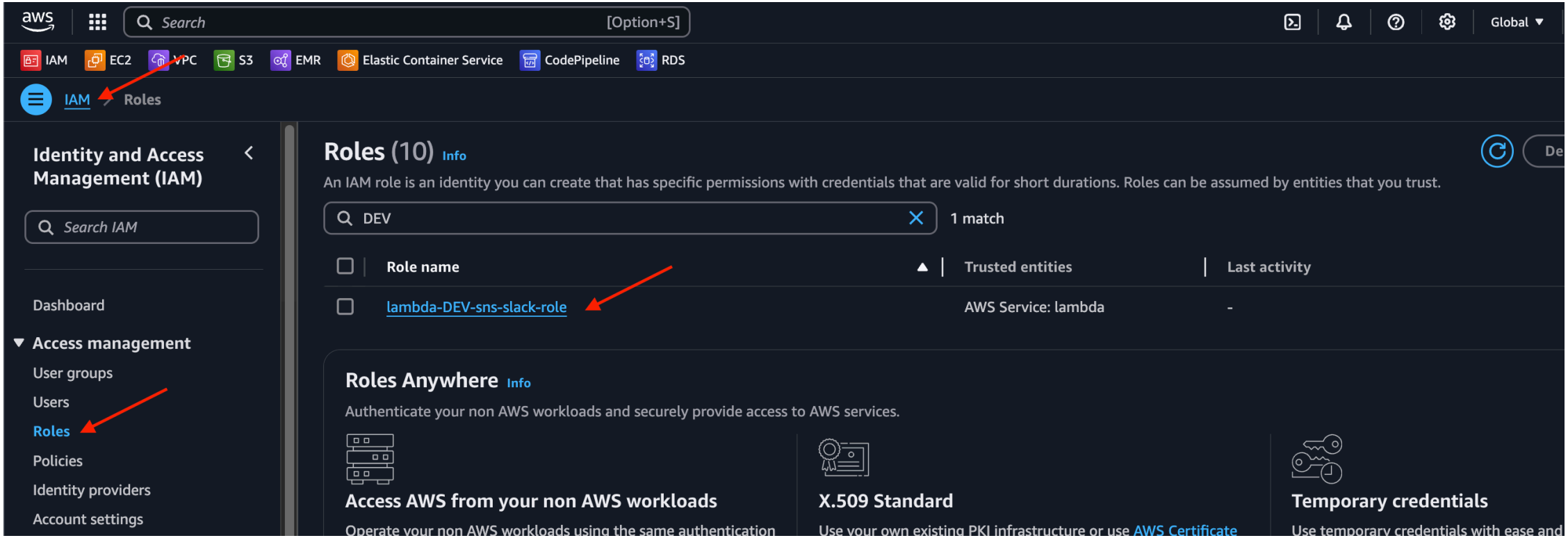
단계2: CodePipeline 실행 결과 확인

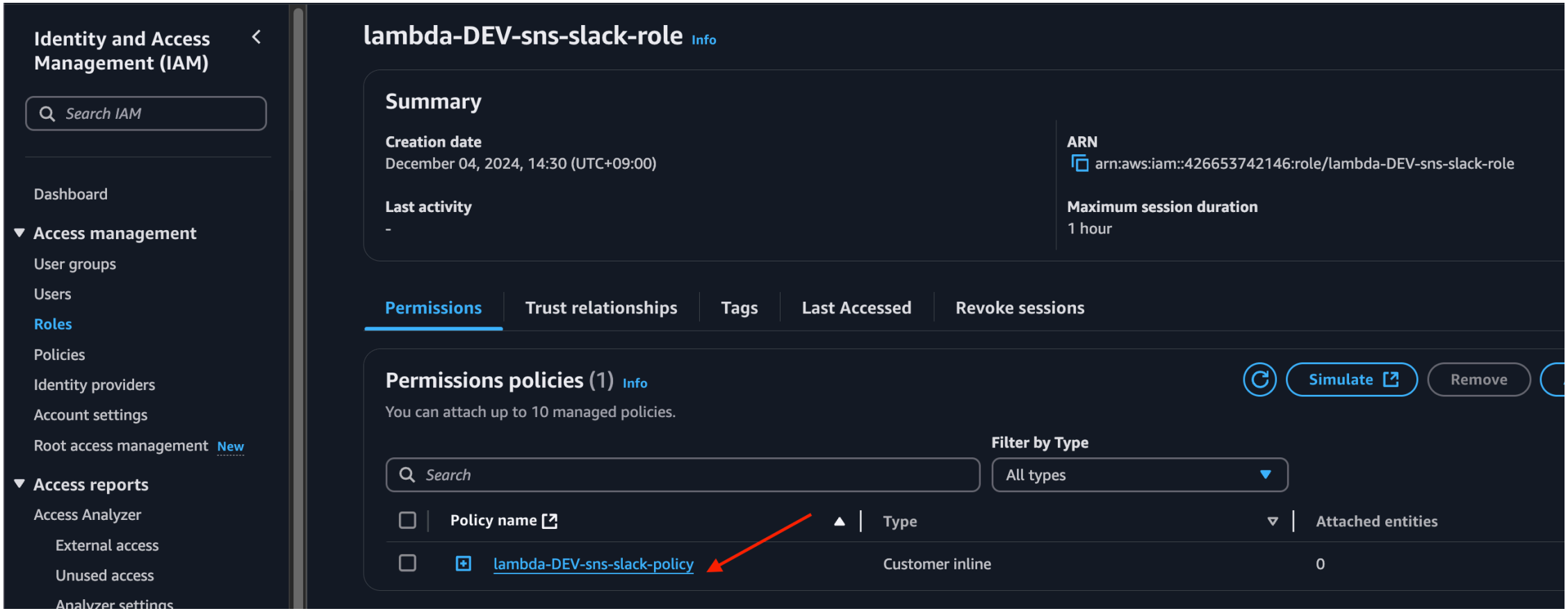


단계3: Cloudformation 실행 결과 확인

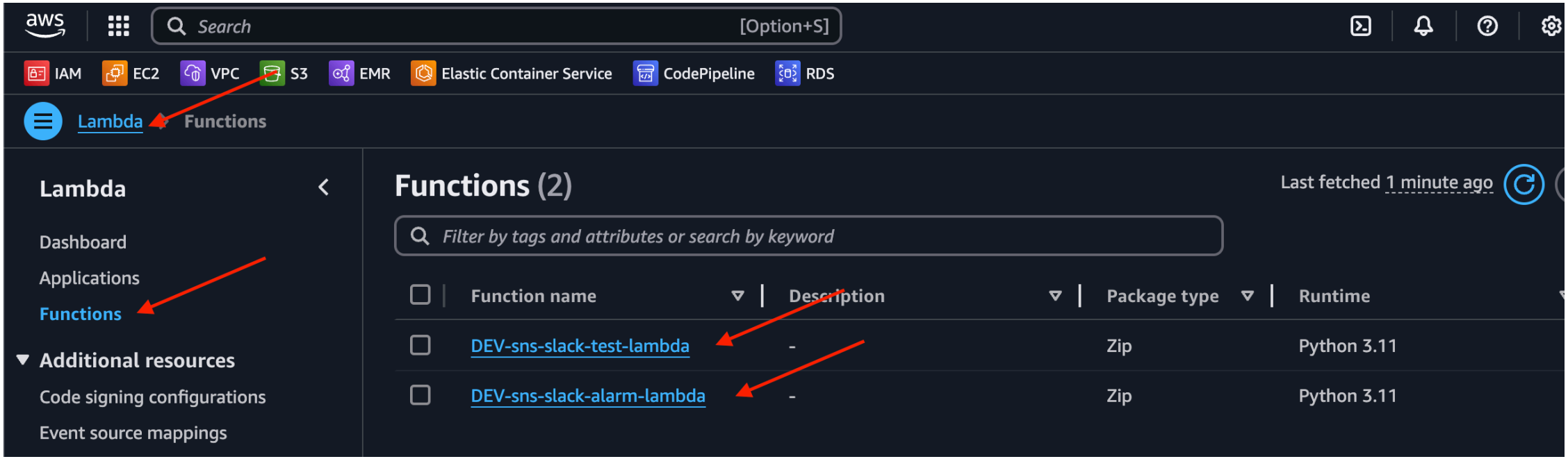

CloudFormation
Stacks
slack-lambda-stack
Stacks (1)
Filter by stack name
Filter status
Active
View nested
1
Stacks
slack-lambda-stack
2024-12-04 14:30:42 UTC+0900
CREATE_COMPLETE
slack-lambda-stack
Delete
Update
Stack actions
Create stack
Stack info
Events - updated
Resources
Outputs
Parameters
Template
Change sets
Git sync
Table view
Timeline view - new
Events (30)
Detect root cause
Search events
Timestamp
Logical ID
Status
Detailed status
Status reason
2024-12-04 14:31:24 UTC+0900
slack-lambda-stack
CREATE_COMPLETE
-
-
2024-12-04 14:31:23 UTC+0900
LambdaPolicy
CREATE_COMPLETE
-
-
2024-12-04 14:31:19 UTC+0900
LambdaPolicy
AlarmLambdaAliaslatest
CREATE_COMPLETE
-
-

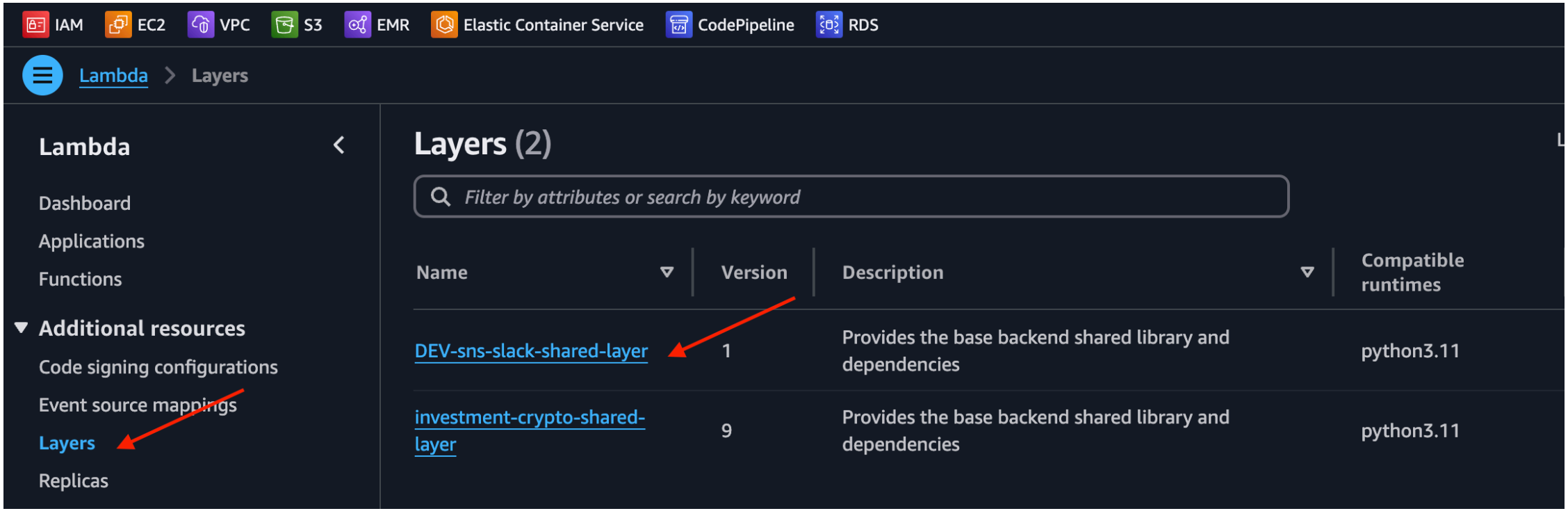
단계4: IAM 실행 결과 확인




Identity and Access Management (IAM)
Search IAM
Dashboard
Access management
User groups
Users
Roles
Policies
Identity providers
Account settings
Root access management New
Access reports
Access Analyzer
External access
Unused access
Analyzer settings
lambda-DEV-sns-slack-role Info
Summary
Creation date
December 04, 2024, 14:30 (UTC+09:00)
Last activity
-
ARN
arn:aws:iam::426653742146:role/lambda-DEV-sns-slack-role
Maximum session duration
1 hour
Permissions
Trust relationships
Tags
Last Accessed
Revoke sessions
Permissions policies (1) Info
You can attach up to 10 managed policies.
Simulate
Remove
Filter by Type
Search
All types
Policy name
Type
Attached entities
lambda-DEV-sns-slack-policy
Customer inline
0

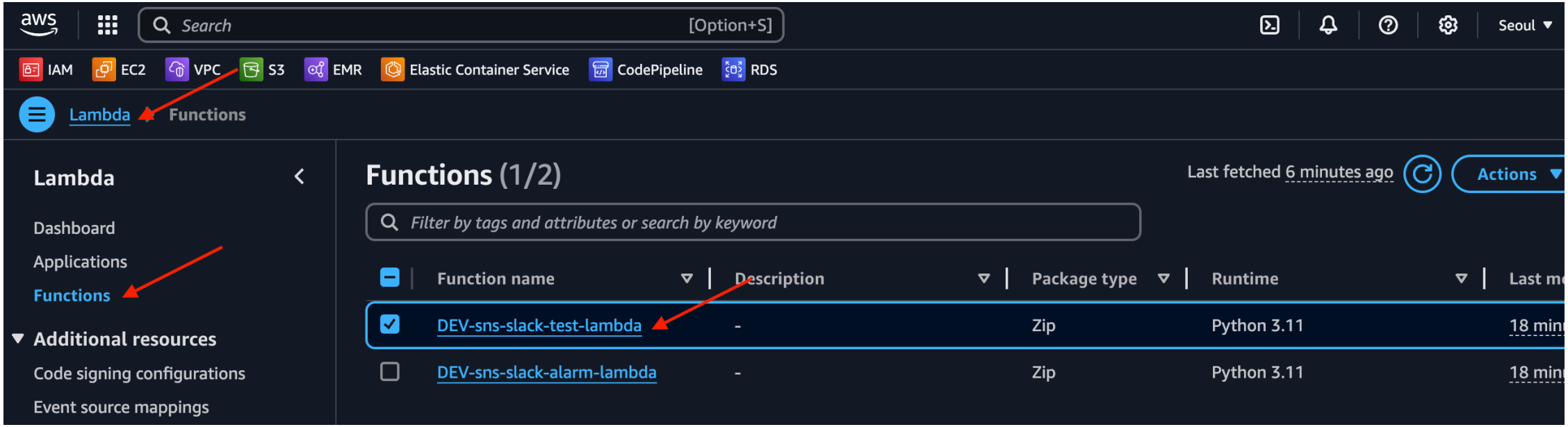
단계5: Lambda 실행 결과 확인



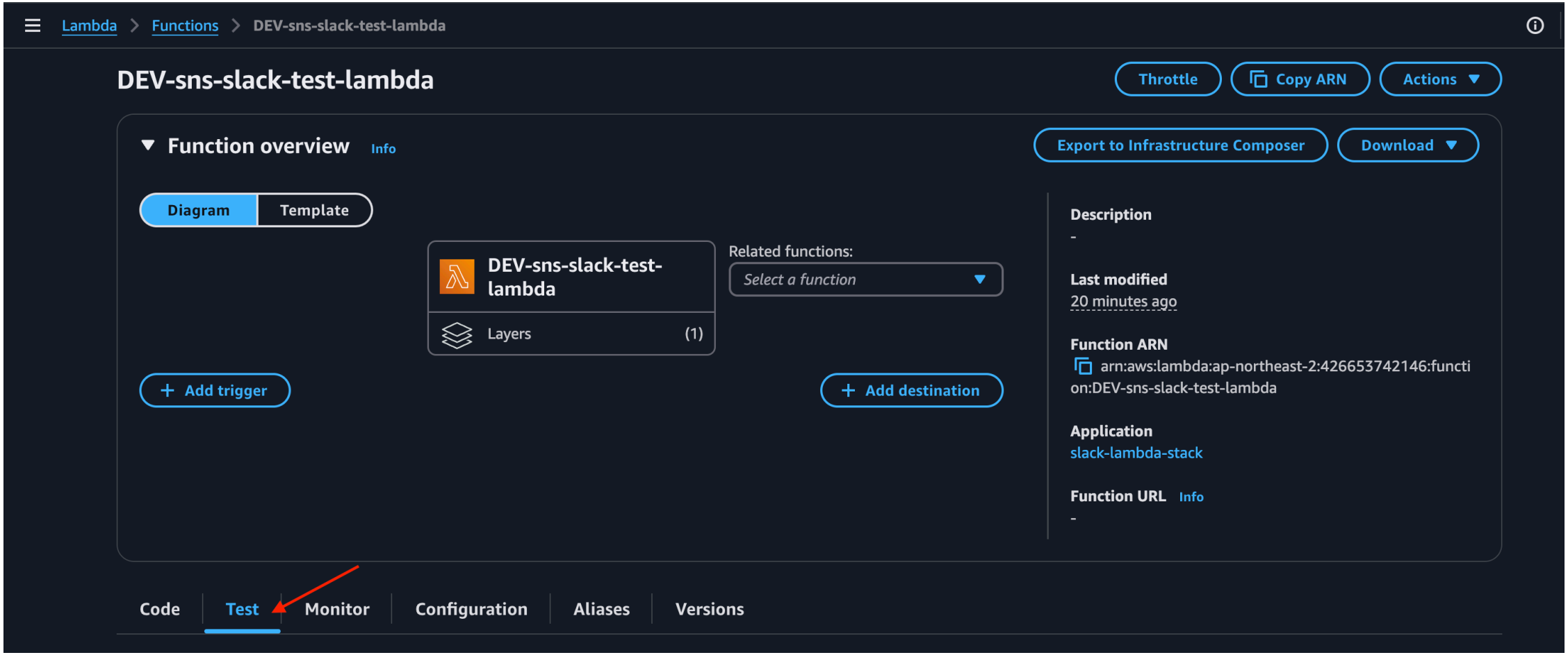

IAM
EC2
VPC
S3
EMR
Elastic Container Service
CodePipeline
RDS
Lambda
Layers
Lambda
Dashboard
Applications
Functions
Additional resources
Code signing configurations
Event source mappings
Layers
Replicas
Layers (2)
Filter by attributes or search by keyword
Name
Version
Description
Compatible runtimes
DEV-sns-slack-shared-layer
1
Provides the base backend shared library and dependencies
python3.11
investment-crypto-shared-layer
9
Provides the base backend shared library and dependencies
python3.11

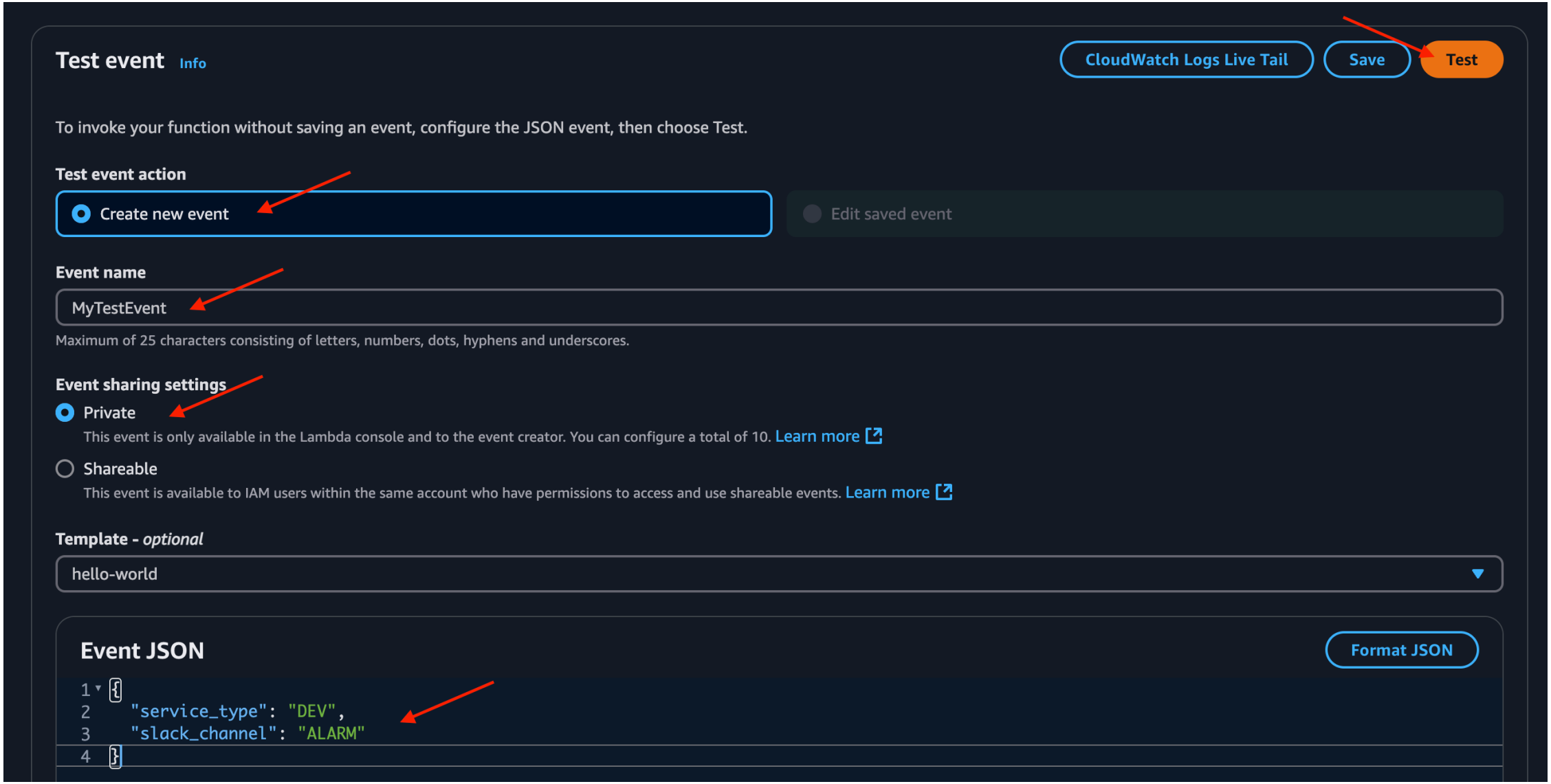
aws lambda 테스트

단계1: lambda 선택

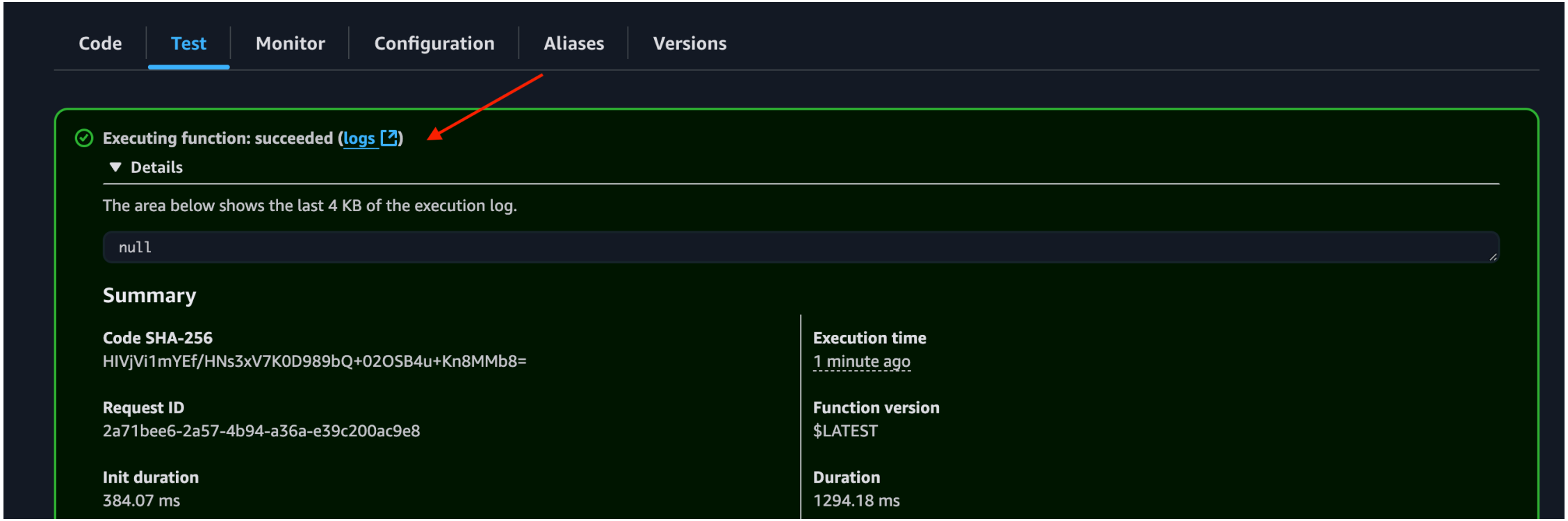


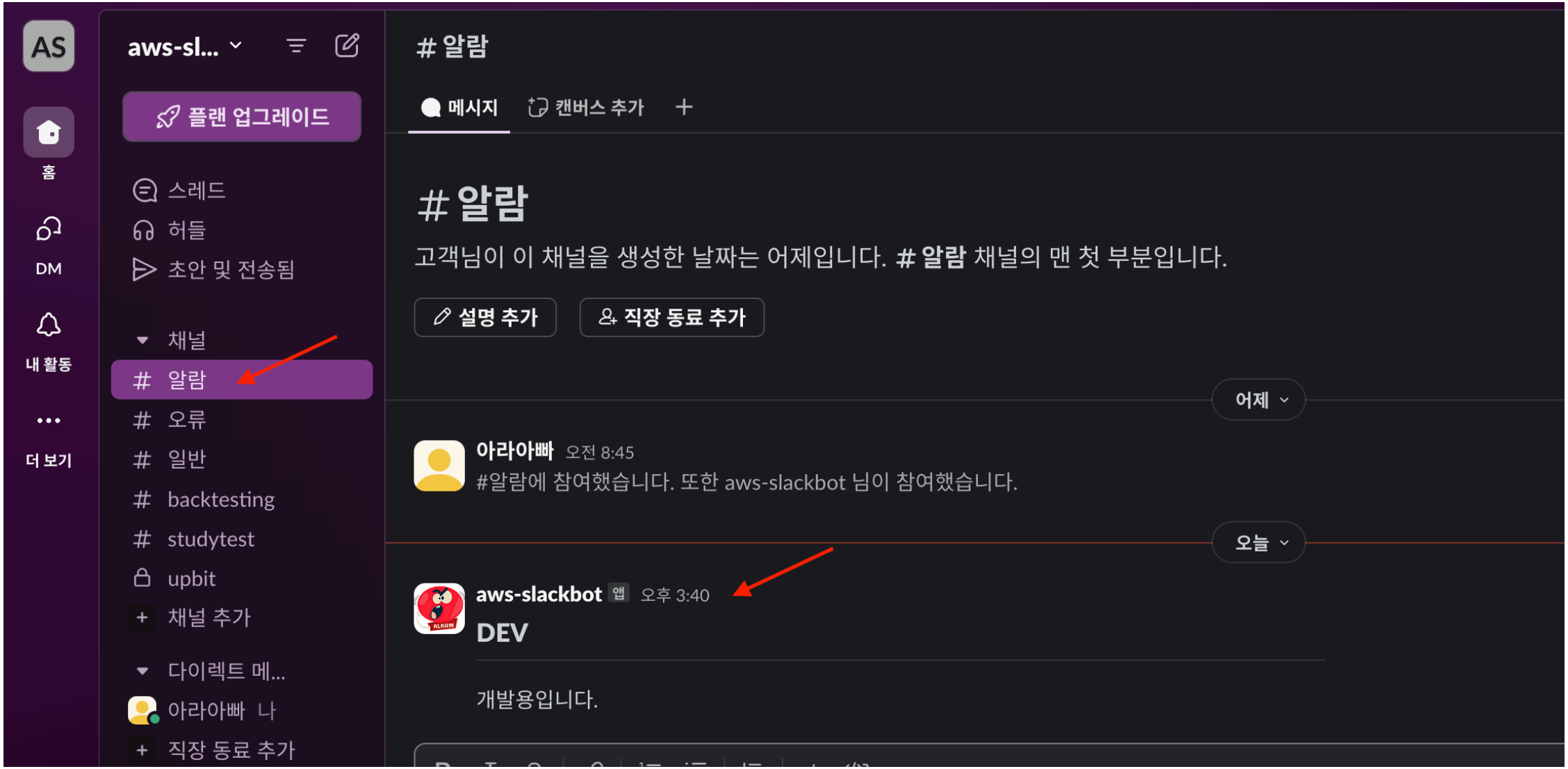
단계2: Test 실행


Lambda > Functions > DEV-sns-slack-test-lambda
DEV-sns-slack-test-lambda
Throttle
Copy ARN
Actions
Function overview Info
Export to Infrastructure Composer
Download
Diagram
Template
DEV-sns-slack-test-lambda
Layers (1)
Related functions:
Select a function
Add trigger
Add destination
Description
-
Last modified
20 minutes ago
Function ARN
arn:aws:lambda:ap-northeast-2:426653742146:function:DEV-sns-slack-test-lambda
Application
slack-lambda-stack
Function URL Info
-
Code
Test
Monitor
Configuration
Aliases
Versions

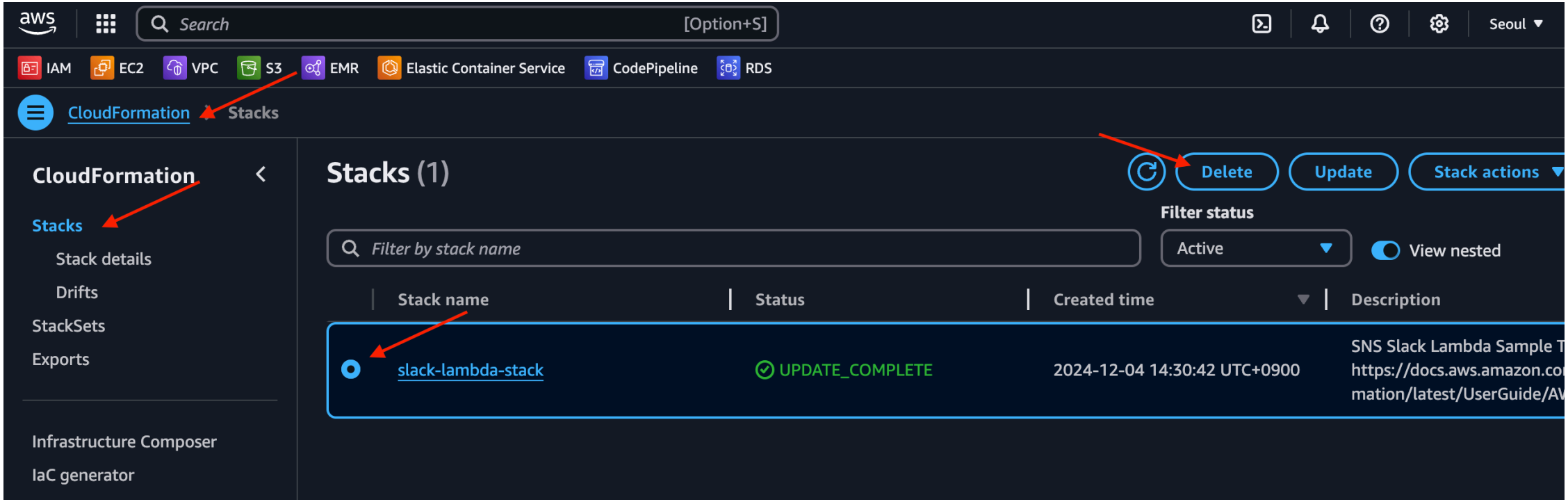

Test event Info
CloudWatch Logs Live Tail
Save
Test
To invoke your function without saving an event, configure the JSON event, then choose Test.
Test event action
Create new event
Edit saved event
Event name
MyTestEvent
Maximum of 25 characters consisting of letters, numbers, dots, hyphens and underscores.
Event sharing settings
Private
This event is only available in the Lambda console and to the event creator. You can configure a total of 10. 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
Format JSON
1 {
2 "service_type": "DEV",
3 "slack_channel": "ALARM"
4 }

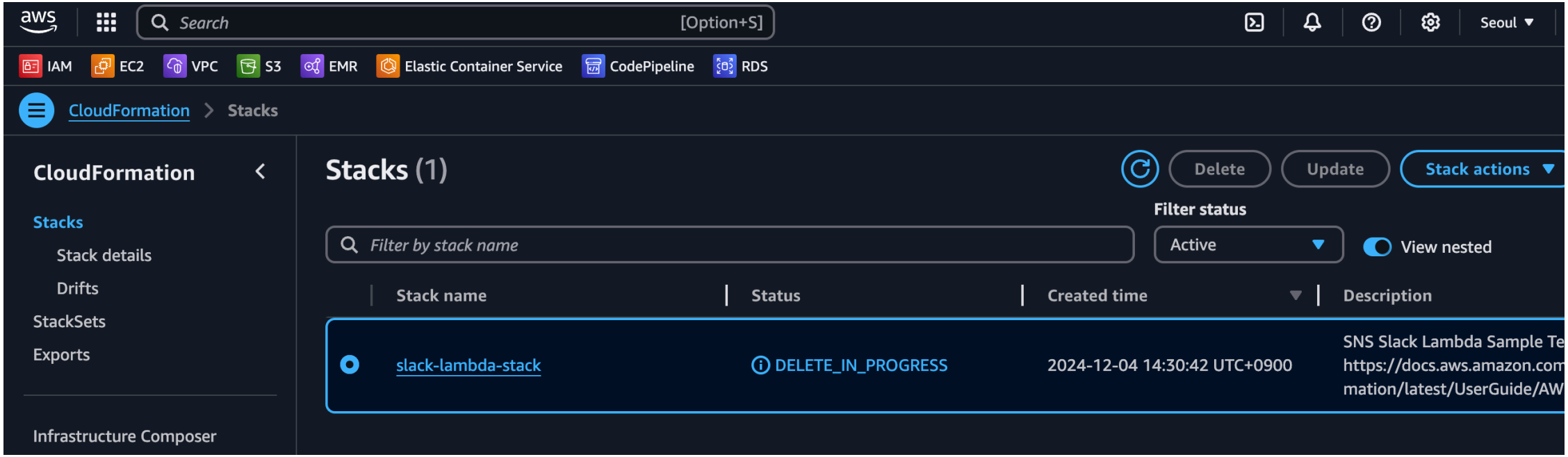
단계3: Test 결과 확인




AS
aws-sl...
플랜 업그레이드
홈
DM
내 활동
더 보기
스레드
허들
초안 및 전송됨
채널
알람
오류
일반
backtesting
studytest
upbit
채널 추가
다이렉트 메...
아라아빠 나
직장 동료 추가
알람
메시지
캔버스 추가
알람
고객님이 이 채널을 생성한 날짜는 어제입니다. # 알람 채널의 맨 첫 부분입니다.
설명 추가
직장 동료 추가
어제
아라아빠 오전 8:45
#알람에 참여했습니다. 또한 aws-slackbot 님이 참여했습니다.
오늘
aws-slackbot 앱 오후 3:40
DEV
개발용입니다.

(옵션) Cloudformation으로 생성된 모든 리소스 삭제




aws
Search
[Option+S]
Seoul
IAM
EC2
VPC
S3
EMR
Elastic Container Service
CodePipeline
RDS
CloudFormation
Stacks
CloudFormation
Stacks
Stack details
Drifts
StackSets
Exports
Infrastructure Composer
Stacks (1)
Delete
Update
Stack actions
Filter status
Filter by stack name
Active
View nested
Stack name
Status
Created time
Description
slack-lambda-stack
DELETE_IN_PROGRESS
2024-12-04 14:30:42 UTC+0900
SNS Slack Lambda Sample Te
https://docs.aws.amazon.com
mation/latest/UserGuide/AW