

Serverless Beyond Simple

Creating Complex Cloud Workflows with ColdFusion at the Center

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What happens when...

There's 3.5GB of data

There are thousands of files

300 people request this ZIP in the same minute

What if your business logic...







What happens when...

You need to generate 7,000 reports a night

You have to add multiple pages of new data to existing reports





What happens when...

Files are 10GB in size You bulk insert millions of rows There's a partial failure



Do you have...

Expertise

Infrastructure

Capital

Can you do this?

No, I can't.

Yes, you can!

Offload

Asyncrhonous

Serverless

Asyncrhonous

Serverless

AWS Lambda Google Cloud Functions Azure Functions Cloudflare Workers Oracle Cloud Functions Adobe I/O

Serverless != Simple

Serverless = Workflows





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We can't afford to run our servers in AWS.

We can afford to run our servers locally and serverless workflows in AWS.

Serverless is about

Cost

Flexibility

New tech

Team growth

"We're not building a brand-new app."

"Yeah, we're not investing in a big, giant serverless rebuild."

"Legal won't let us put our data in the cloud."

Yes, you can!

Today: architecture + lessons learned







Split and Share Responsibility

Logic and main DB locally

Async work offloaded to the cloud

STRATEGIES

Permissions and Gating

Permissions and Gating

Services in AWS don't need to know your app permissions





Permissions and Gating

Give your service a packet that tells it what it needs to do

Permissions and Gating

Give your service a packet that tells it what it needs to do

Note:

256KB incoming packet limit in many AWS services
Permissions and Gating

Your ColdFusion app determines authorization, not the serverless workflow

STRATEGIES

Messaging Queues/Events Over Direct Requests



Don't overwhelm downstream services



SQS over SNS

sqsService= getCloudService(awsCredentials, {"serviceName" : "SQS"});
msgBody = {"customer" : 123, "orderID" : 456, "amount" : "78.90"};
message = {"messageBody" : msgBody};
myQueue.sendMessage(message);

Dead Letter Queues (DLQs) to catch failed messages

Messages to invoke Step Functions Workflows

STRATEGIES

All Files in S3



Put all non-code files in S3



Never upload to your ColdFusion server. Use presigned PUTs

myBucket = application.s3ServiceObject.bucket("your bucket name");

presignedPUTRequest ={

"duration": "2h",

"key": "fileName.txt"

};

awsResponse = myBucket.generatePutPresignedUrl(presignedPUTRequest);

signedURL = awsResponse.url;



CF server performs authorization to put the file and generates appropriate constraints

STRATEGIES

Use Orchestration Services

Don't chain Lambda functions together.

Avoid Lambda > SQS > Lambda > SQS...



Scheduled Task to Fetch Data fro..



Step Functions

Long execution time **Branching** logic Parallel processing Simple error handling Simple retries Data manipulation Wait for user scenarios Visualization of each execution

Step Functions

_____ STRATEGIES

Lambda DynamoDB SQS SNS **API** Gateway SageMaker Fargate + ECS CodeBuild Athena + Glue

+ 200 other AWS services via simple calls





Parameters

1		
2	2 "staticValue": "Just a string",	
3	3 • "catalog": {	
4	<pre>"myFavoriteMovie.\$": "\$.movies[0]",</pre>	
5	<pre>"format.\$": "States.Format('{}', \$.movies[0].genre)",</pre>	
6	<pre>"array.\$": "States.Array(1, 'hello world', false, 4.5, \$.movies[0].genre)",</pre>	
7	<pre>7 "stringToJson.\$": "States.StringToJson(\$.stringJson)"</pre>	
8	3 }	
9	3 }	
•••		

Filtered input after Parameters

Must be a valid Json object.

Filtered input before Parameters



_____ STRATEGIES

SourceID_184_DestinationID_701_isForDelete_false1664331950

New execution page	dit state machine New execution Stop execution		
Details Execution input Execution output Def	inition		
Execution Status	Started Sep 27, 2022 10:25:50.143 PM End Time Sep 27, 2022 10:25:51.832 PM		
Graph inspector			
Iteration status Index Any status V 《 < 0 V > 》	Details Step input Step output		
+ Start CheckIfFileExists CopyFile DeleteOriginalObjectAfterCopy Pass	Name Type CheckIfFileExists Task Status		
In Progress Succeeded Failed Cancelled Caught Error			

Step Functions provide

Visual workflow building Branching and looping Error handling/retries Direct service integration Visual debugging

STRATEGIES

Avoid Redundant Work

Avoid Redundant Work

Is there a task for this exact thing in the queue?



STRATEGIES

Managing State



Store state locally for ColdFusion calls to AWS Store state in DynamoDB for workflows in AWS

Managing State

```
dynamoDBService = getCloudService(awsCredentials, dynamoDBConfiguration);
dynamoQuery = {
    "tableName": "runningWorkflows",
    "key": {
        "service": {"S", "zipService"},
        "executionID": {"N", "247856"}
};
awsResponse = dynamoDBService.getItem(dynamoQuery);
```

itemInfo = awsResponse.item;

STRATEGIES

Finishing Up and Calling Back

_____ STRATEGIES



Check Step Function execution completion



Secure webhooks







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Go Do!
