



AWS
re:Invent

SVS404-R

Networking best practices for serverless applications

Nicki Stone

Senior Software Engineer
Amazon Web Services

Related breakouts or repeats

SVS404-R1 Networking best practices for serverless applications

Wednesday 10:45 AM - 11:45 AM

SVS212 I didn't know Amazon API Gateway did that

Tuesday 6:15 PM - 7:15 PM

Thursday 11:30 AM - 12:30 PM

SVS218 Enhance security and compliance with AWS Lambda

Monday 2:30 PM - 3:30 PM

Wednesday 1:00 PM - 2:00 PM

Agenda

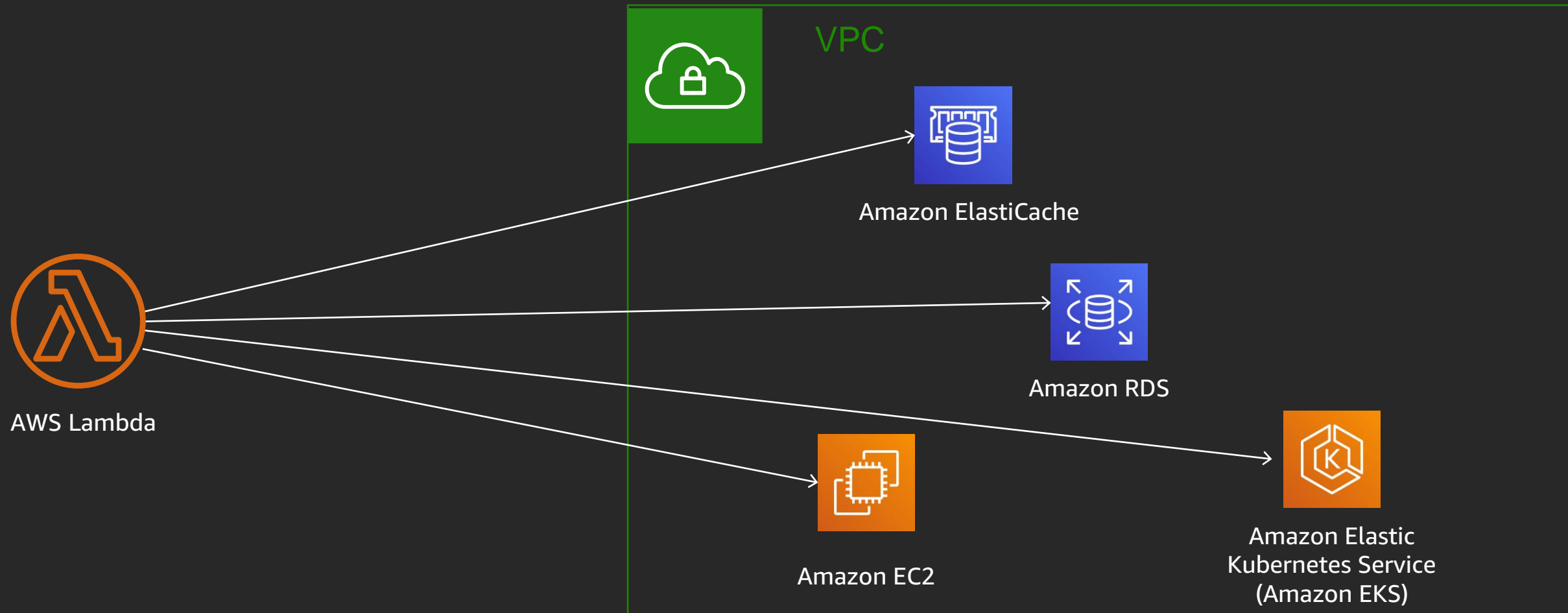
Lambdas in VPCs + demo

Best practices for private and public API Gateway projects

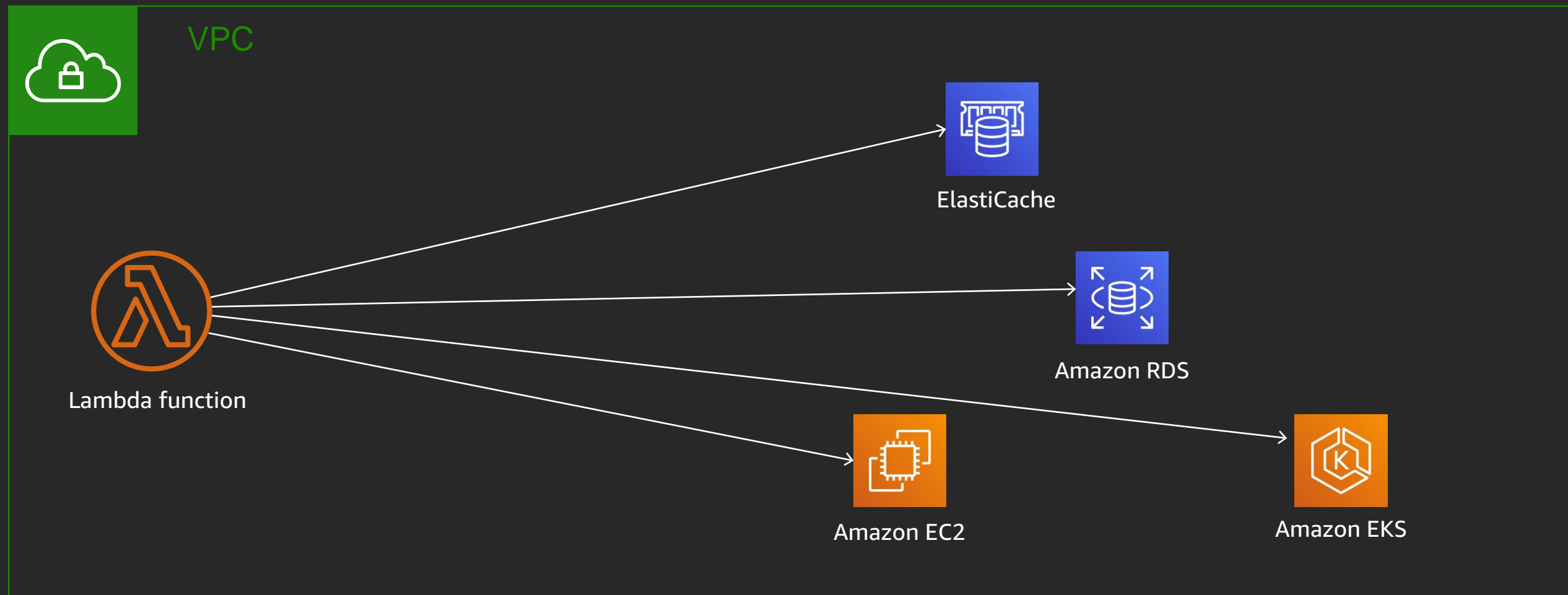
Miscellaneous

Lambda & VPC

When should you do it?

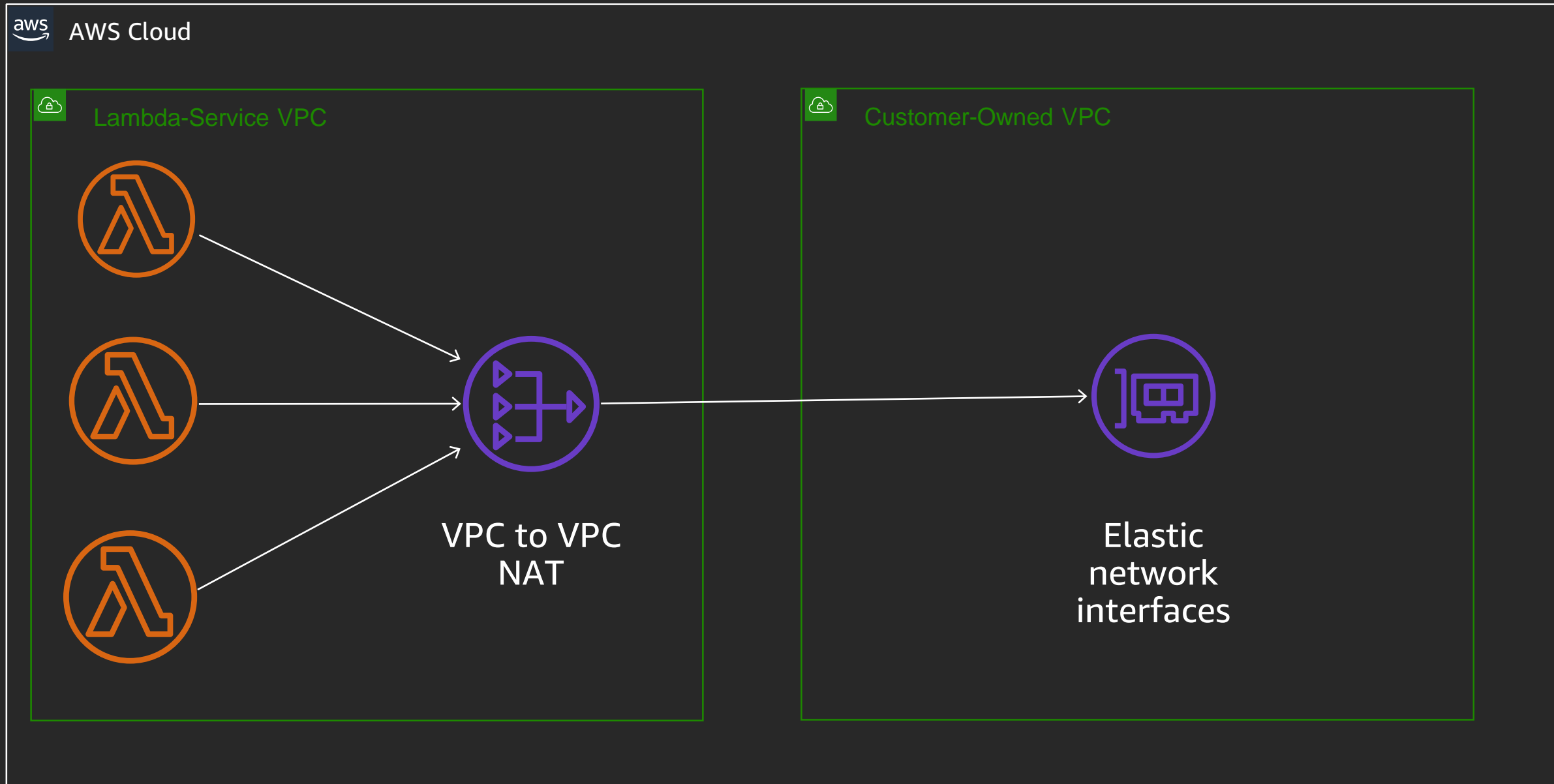


When should you do it?



How do I get the best performance?

Recent AWS performance improvements ^{new!}



Function Example Execution Time Difference

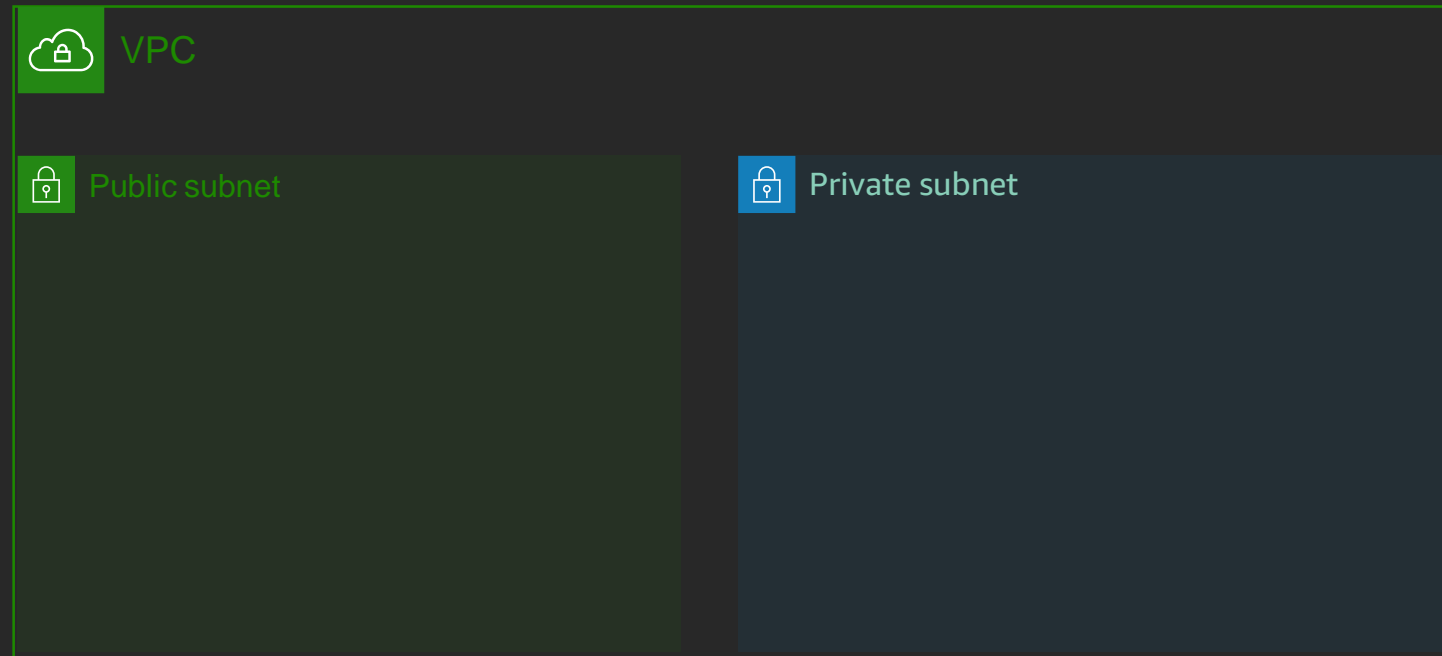
Old Time	New Time
14.8s	933ms

What didn't change?

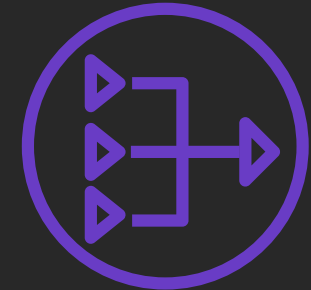


AWS Identity and Access
Management

IAM
Permissions



Security Config for VPC's



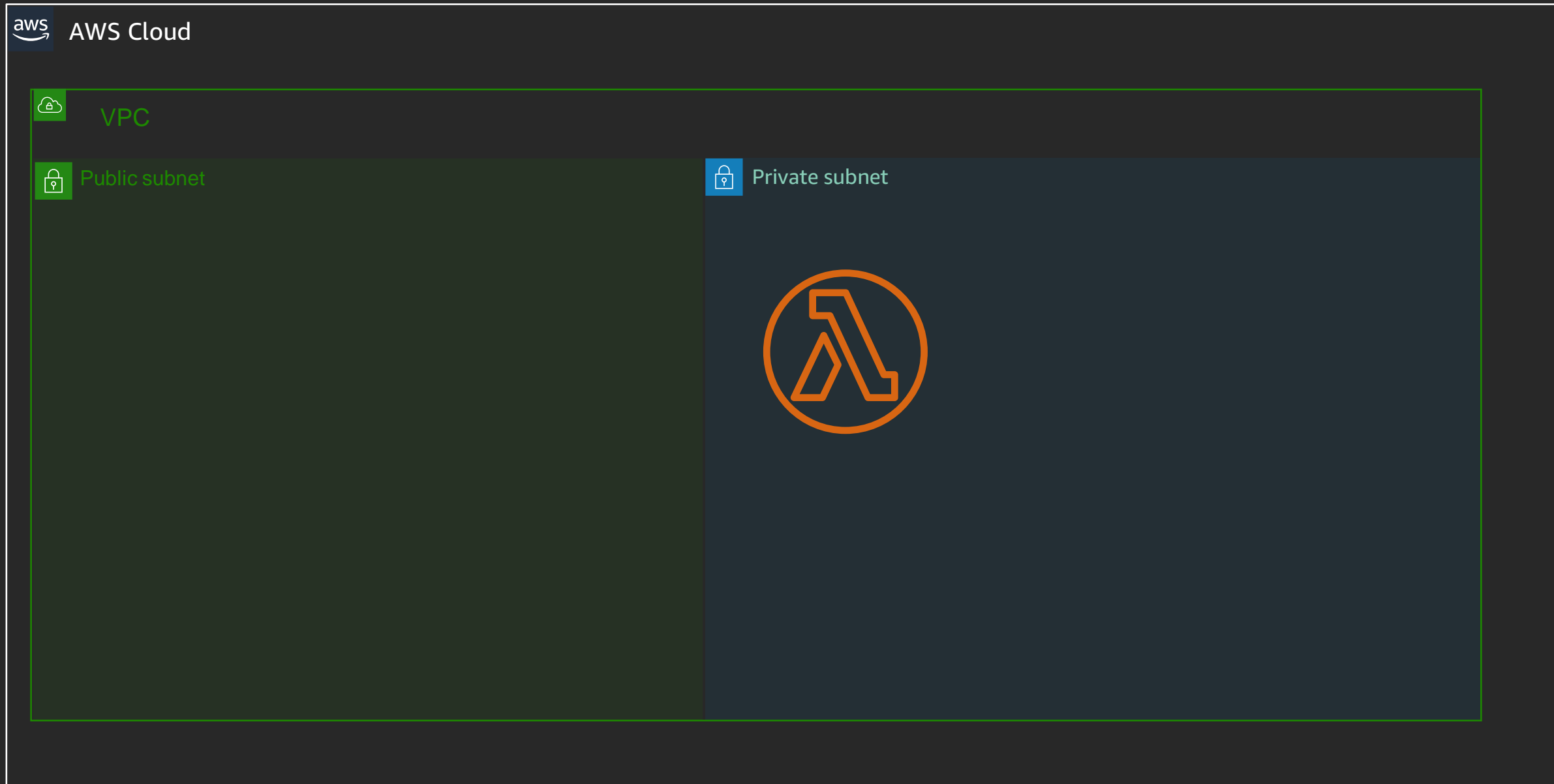
NAT gateway



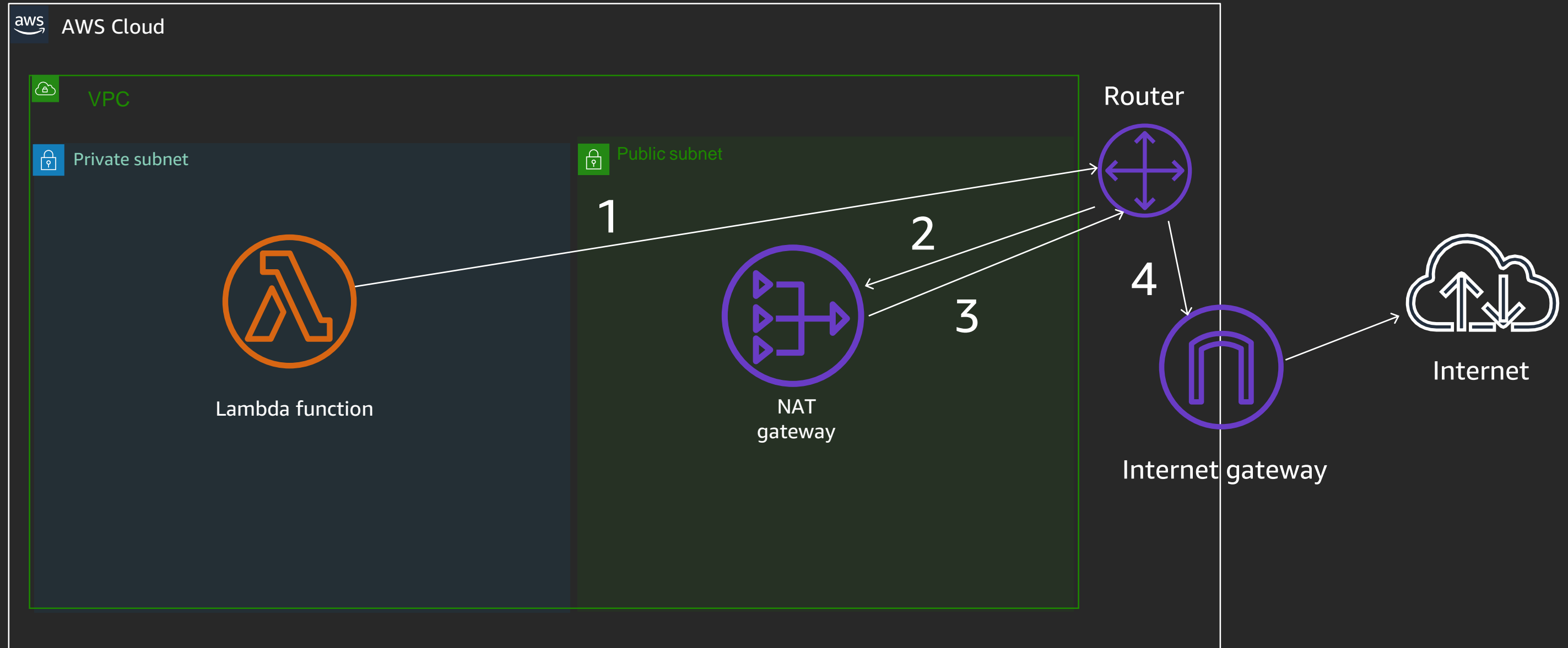
Endpoints

VPC internet
access

Some best practices

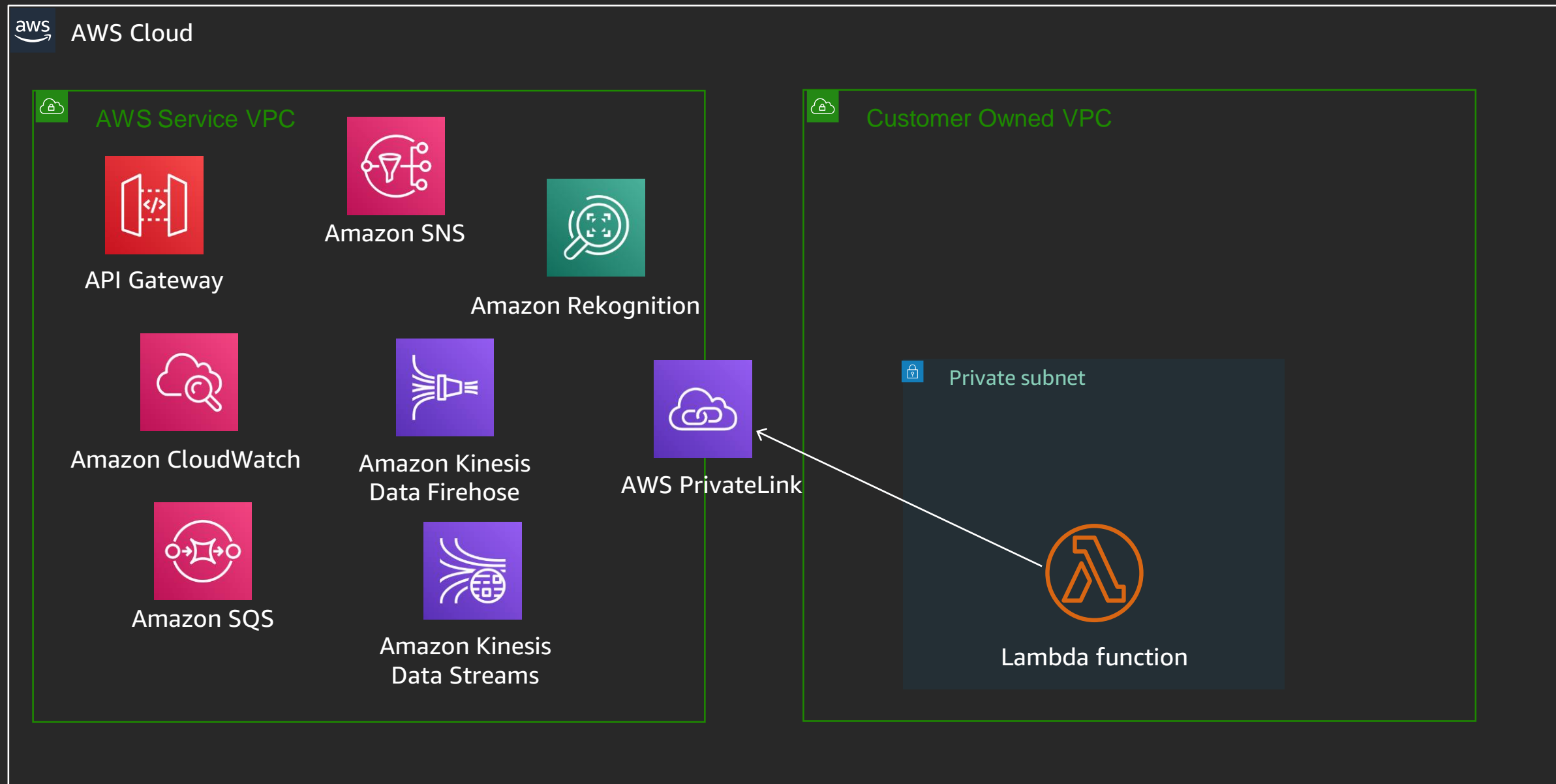


Some best practices cont'd ...



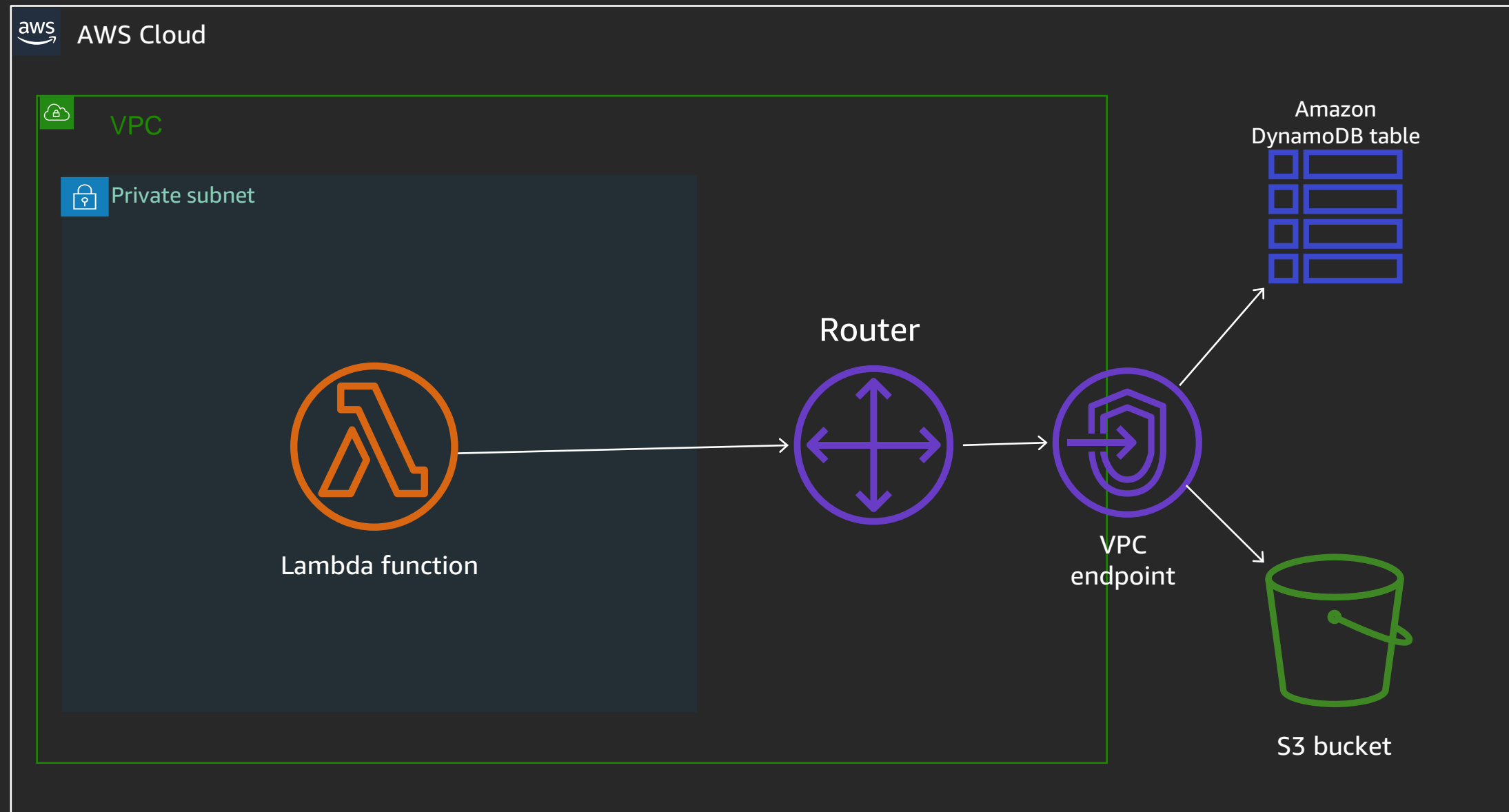
<https://github.com/awsdocs/aws-lambda-developer-guide/blob/master/templates/vpc-privatepublic.yaml>

VPC endpoints—interface endpoints



Full list of services -> <https://docs.aws.amazon.com/vpc/latest/userguide/vpc-endpoints.html>

VPC endpoints—gateway endpoints

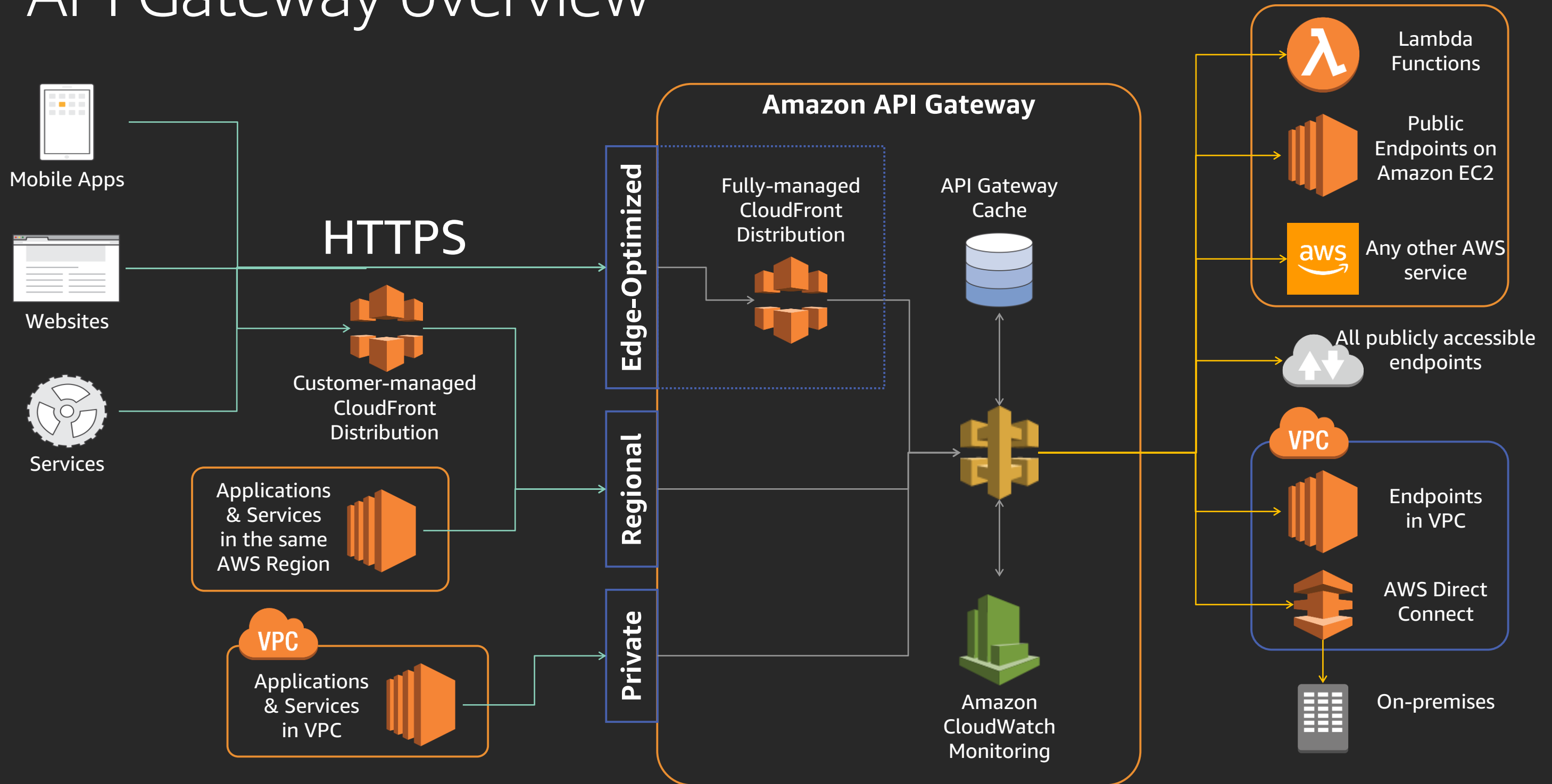


<https://github.com/awsdocs/aws-lambda-developer-guide/blob/master/templates/vpc-private.yaml>

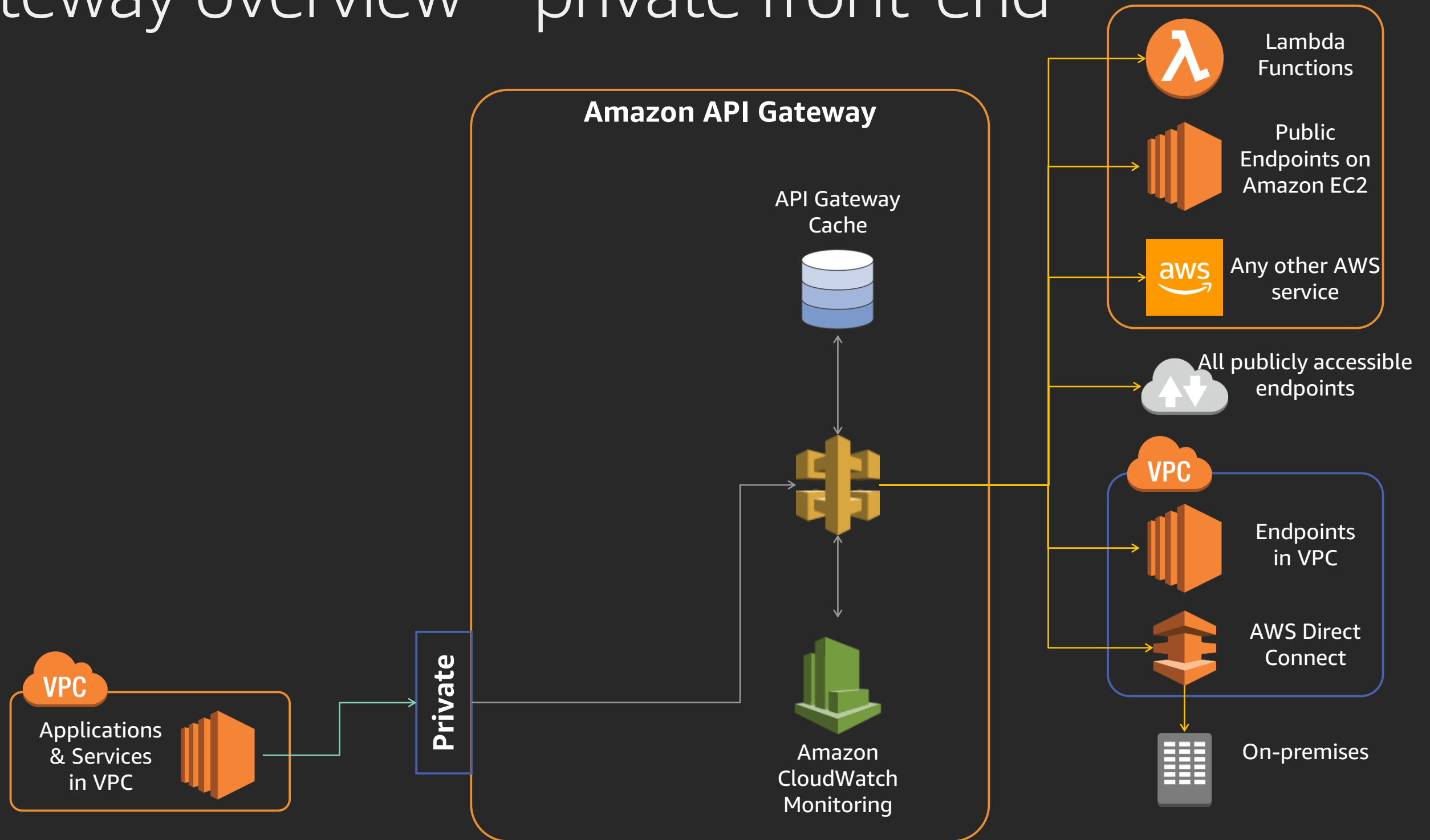
Demo

Private API Gateway best practices

API Gateway overview

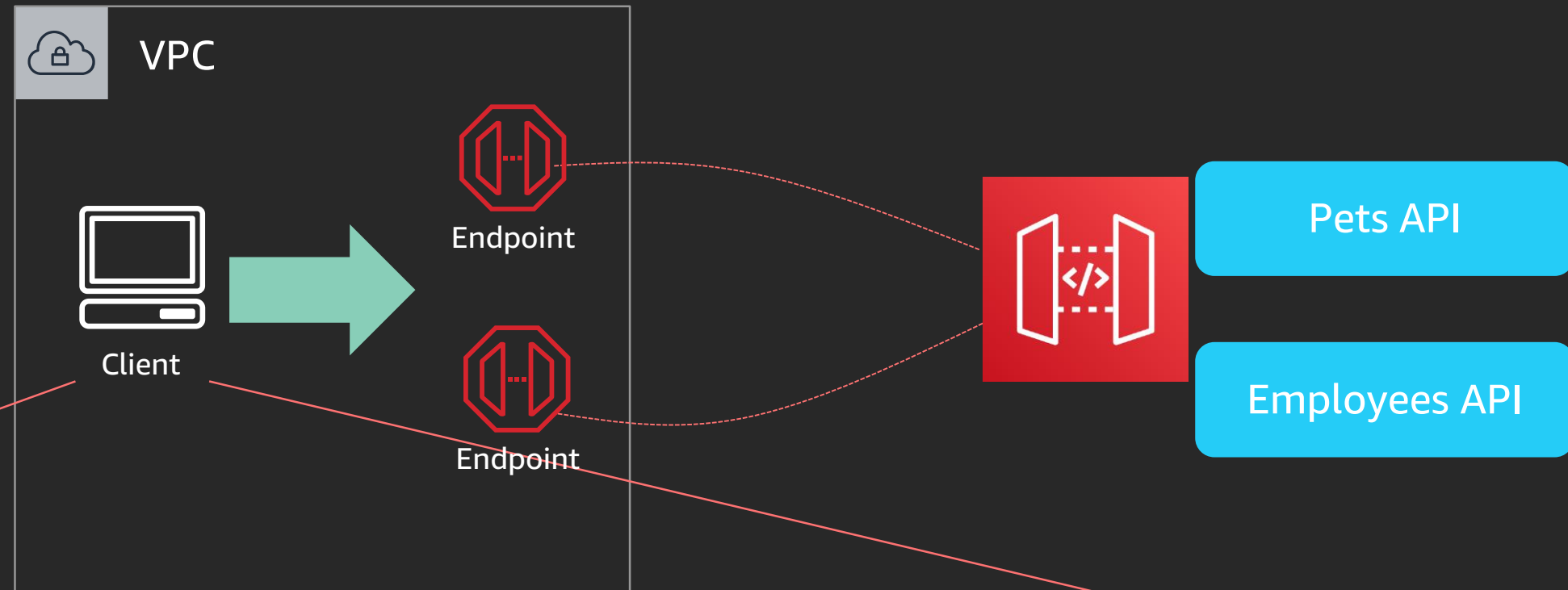


API Gateway overview – private front-end



Accessing your private APIs from inside the VPC

Private DNS Name **ON**

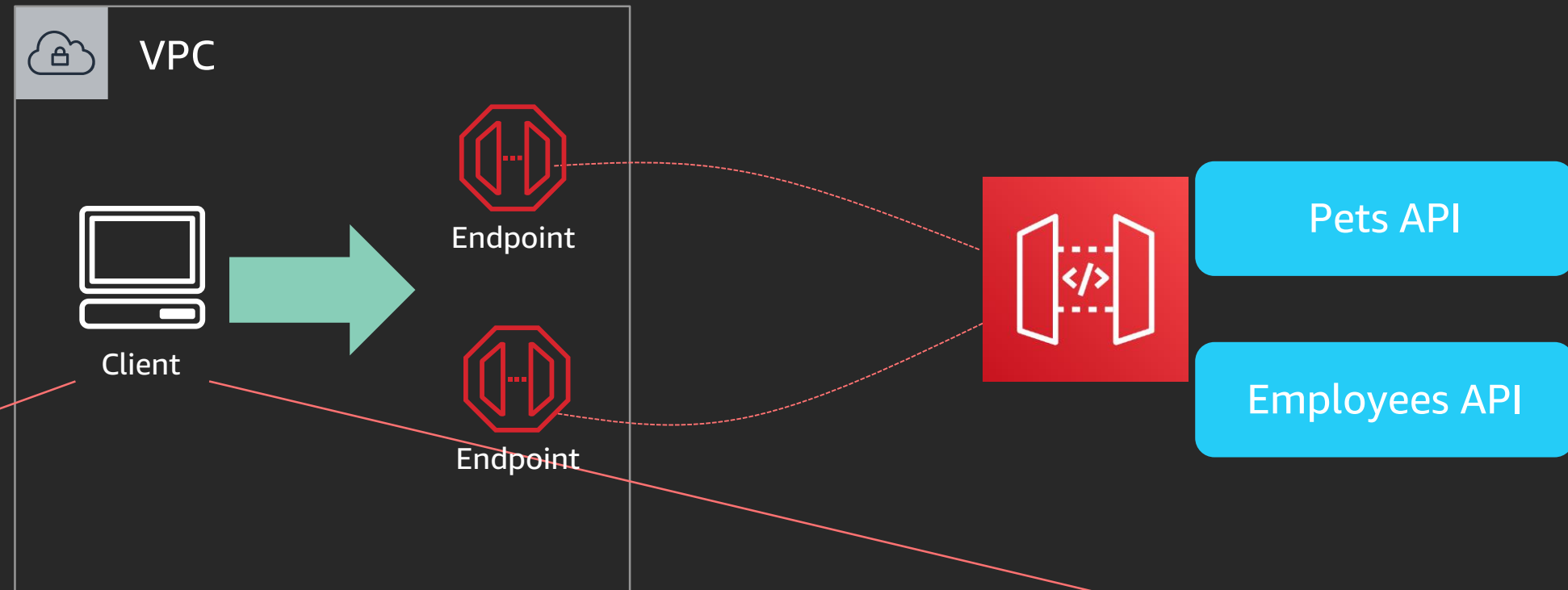


<https://petsAPIID.execute-api.eu-west-1.amazonaws.com/stage/pets>

<https://empAPIID.execute-api.eu-west-1.amazonaws.com/stage/employees>

Accessing your private APIs from inside the VPC

Private DNS Name **ON**



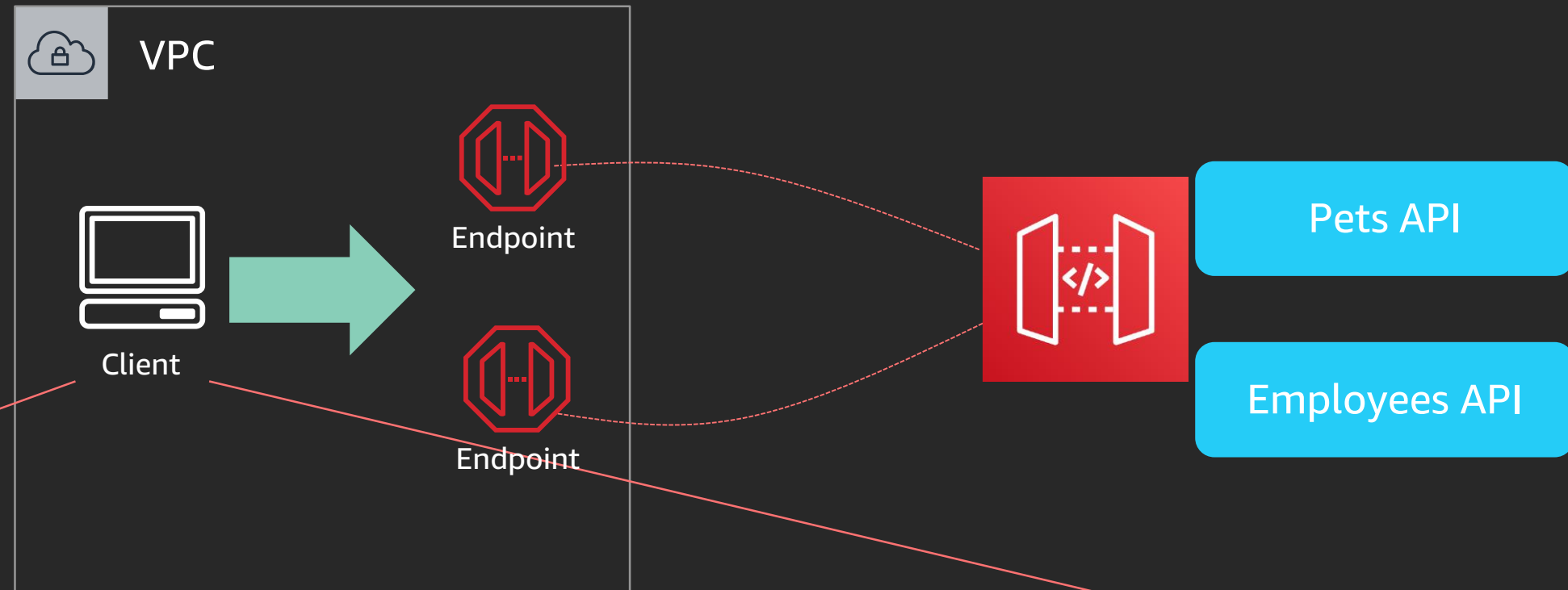
GOTCHA WARNING

<https://petsAPIID.execute-api.eu-west-1.amazonaws.com/stage/pets>

<https://empAPIID.execute-api.eu-west-1.amazonaws.com/stage/employees>

Accessing your private APIs from inside the VPC

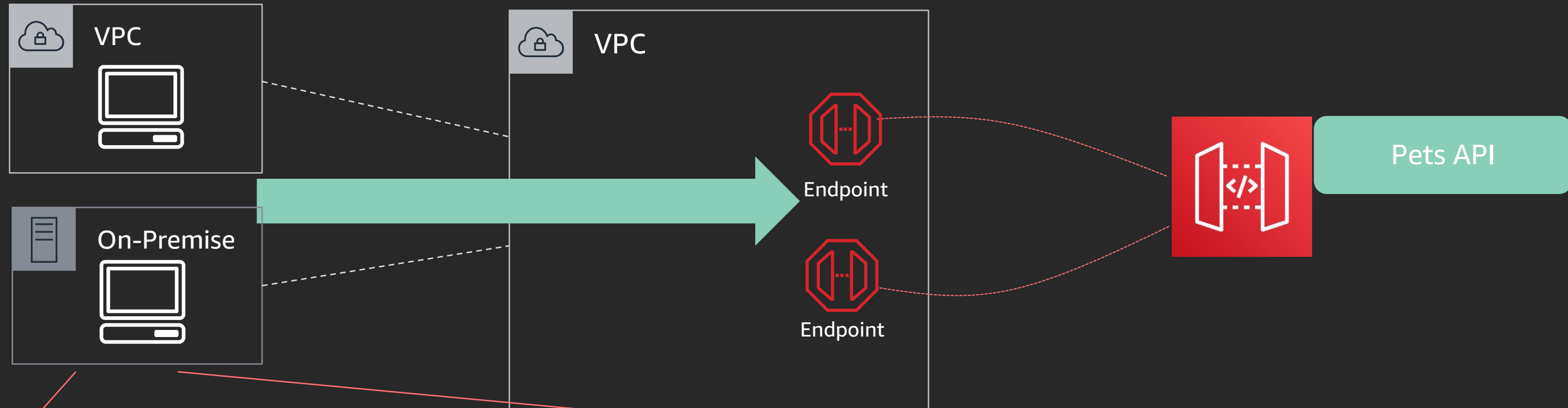
Private DNS Name **OFF**



<https://vpce-ID-api.eu-west-1.vpce.amazonaws.com/stage/pets>

Host: petsAPIID.execute-api.eu-west-1.amazonaws.com

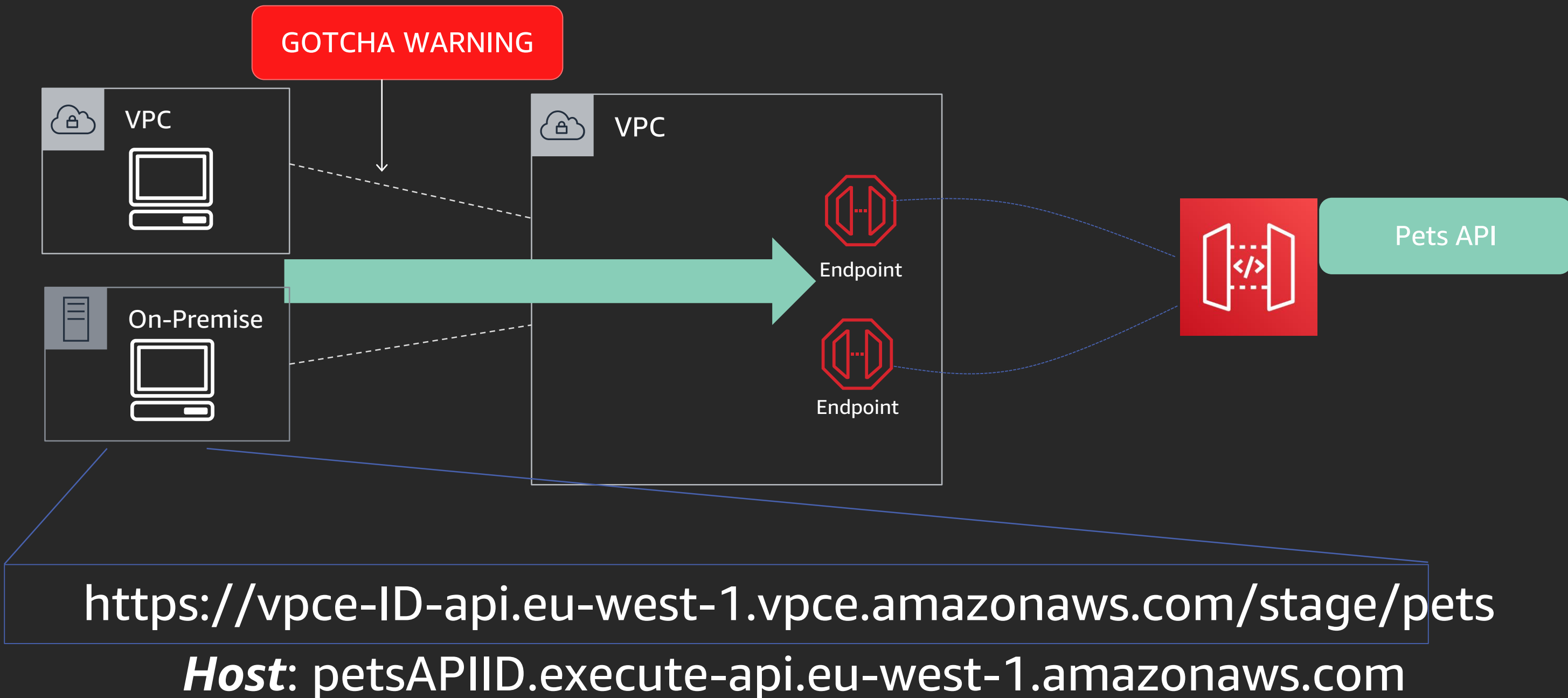
Accessing your private APIs from outside the VPC



<https://vpce-ID-api.eu-west-1.vpce.amazonaws.com/stage/pets>

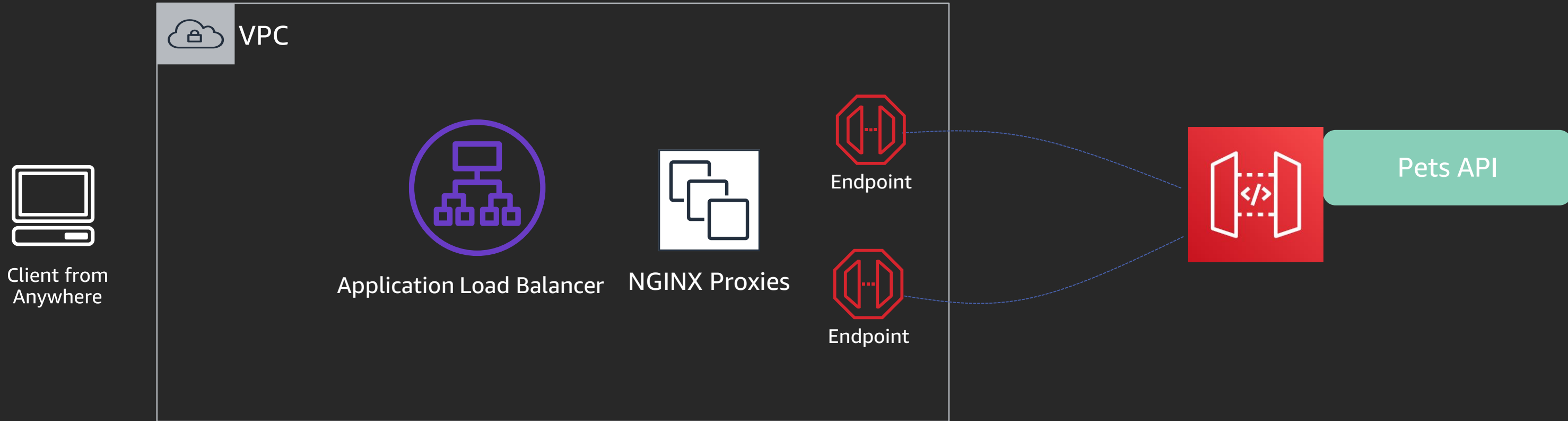
Host: petsAPIID.execute-api.eu-west-1.amazonaws.com

Accessing your private APIs from outside the VPC

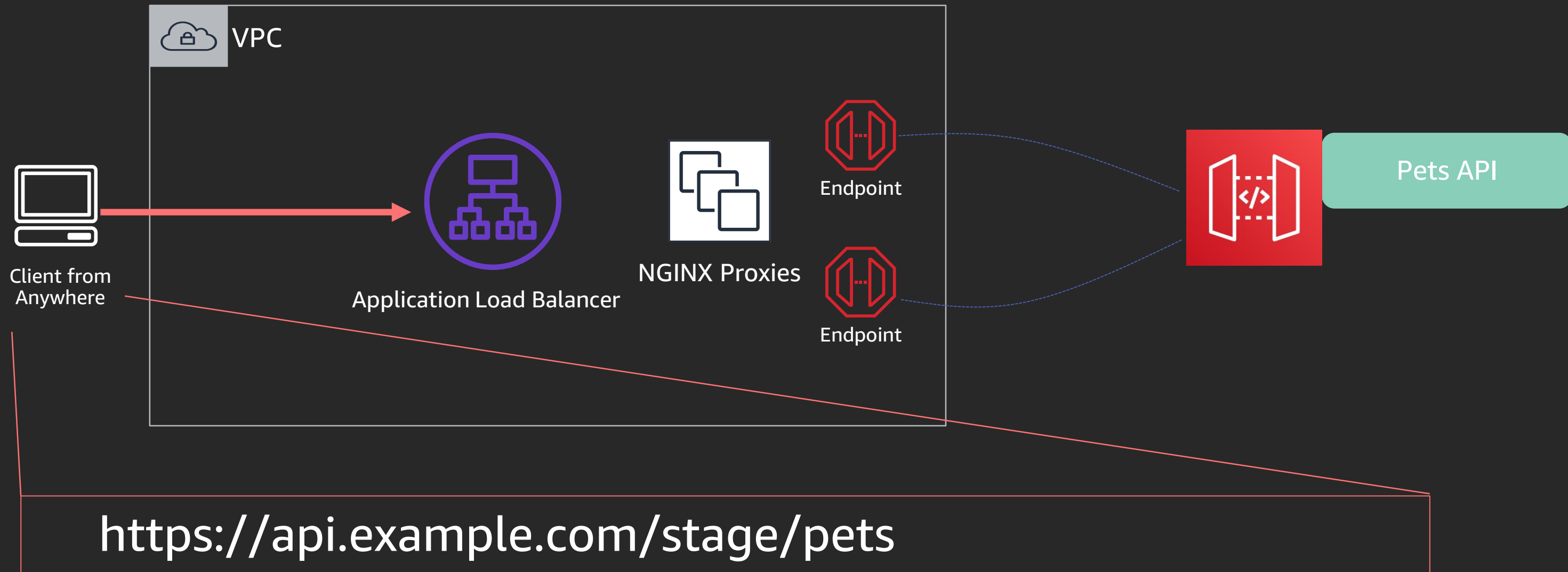


What can customers do to solve this?

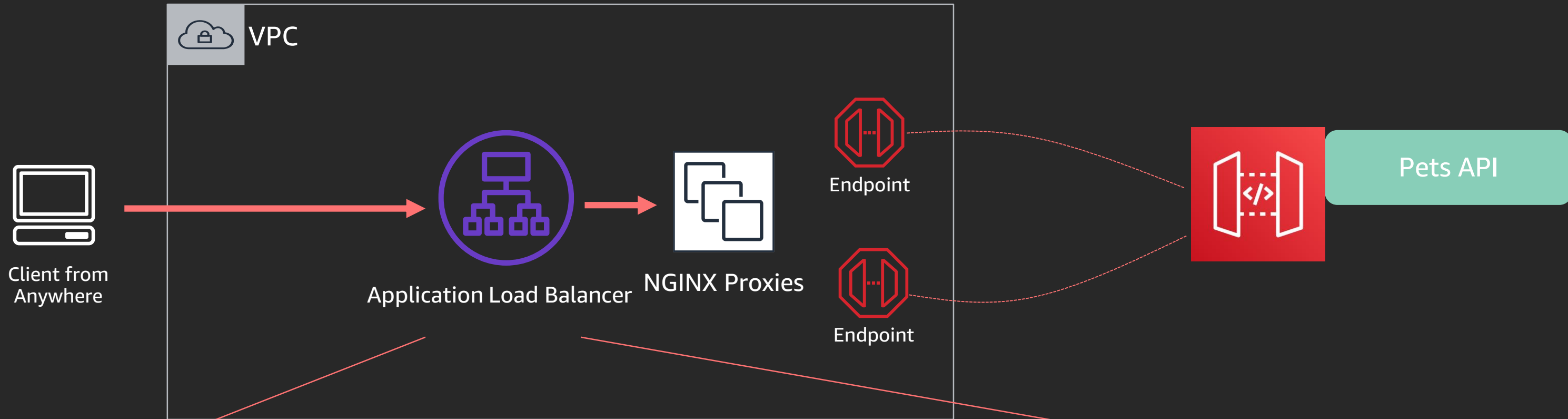
Accessing your private API from anywhere



Accessing your private API from anywhere - flow

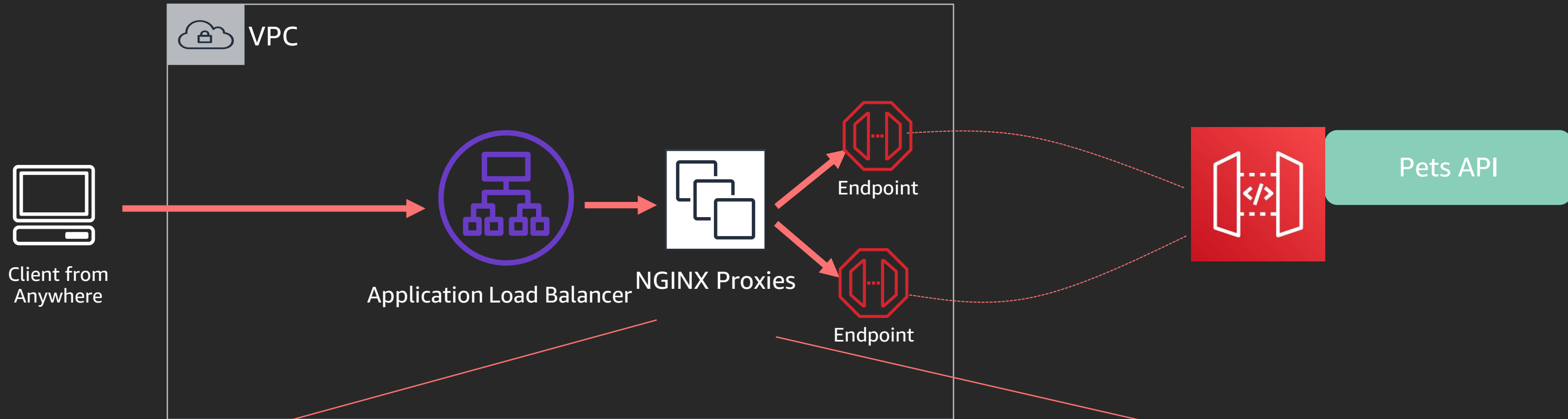


Accessing your private API from anywhere - flow



<https://api.example.com/stage/pets>

Accessing your private API from anywhere - flow



`https://endpointIP/stage/pets`

Host: `petsAPIID.execute-api.eu-west-1.amazonaws.com`

Public API Gateway best practices

REGIONAL vs EDGE

	Response Time (EDGE)	Response Time (REGIONAL)
Charge API	2005ms	1770ms
Retrieve Profile	802ms	237ms

“Don’t use Lambda to transport, only transform ...”

Ajay Nair

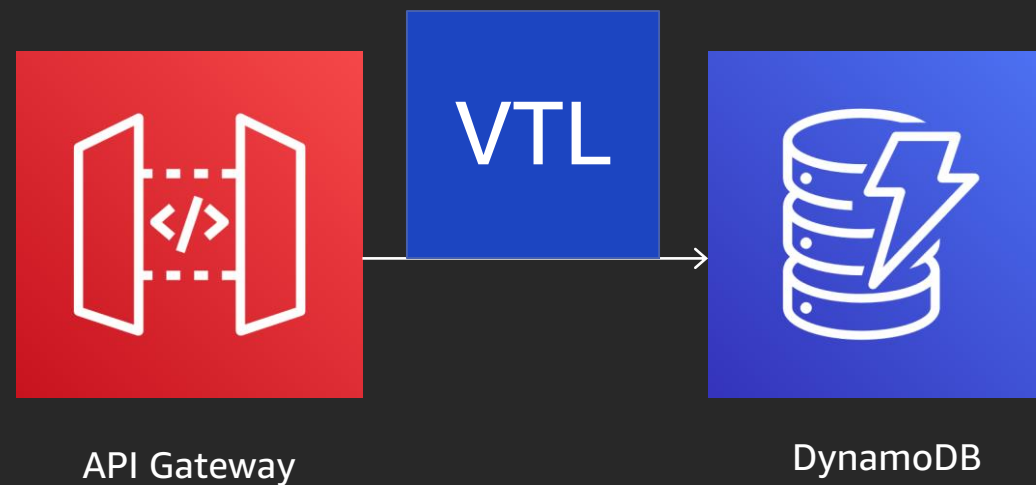
Director of Product Management,
AWS Serverless Applications

Transform NOT transport example

NO



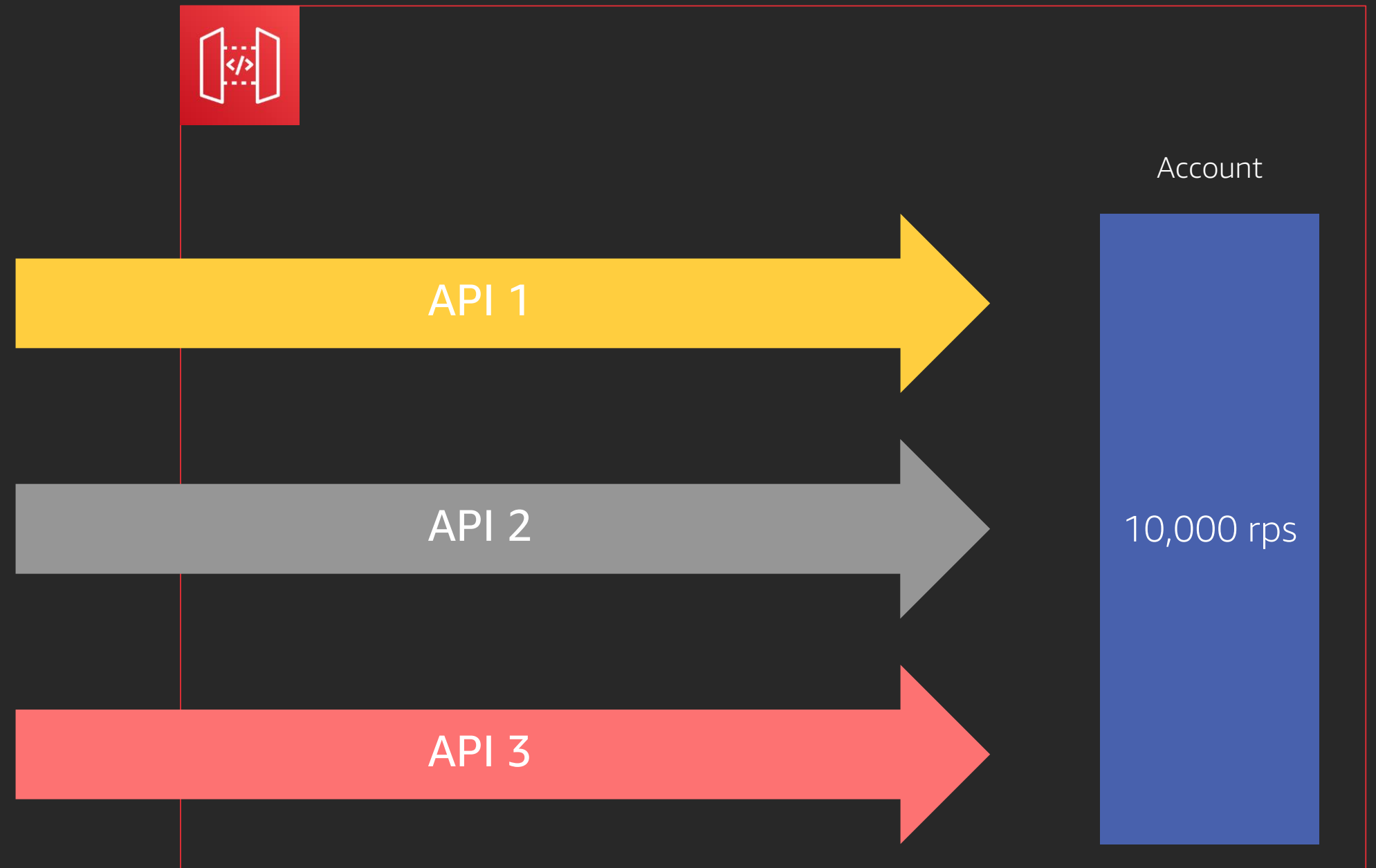
YES



For CRUD operations

Throttling

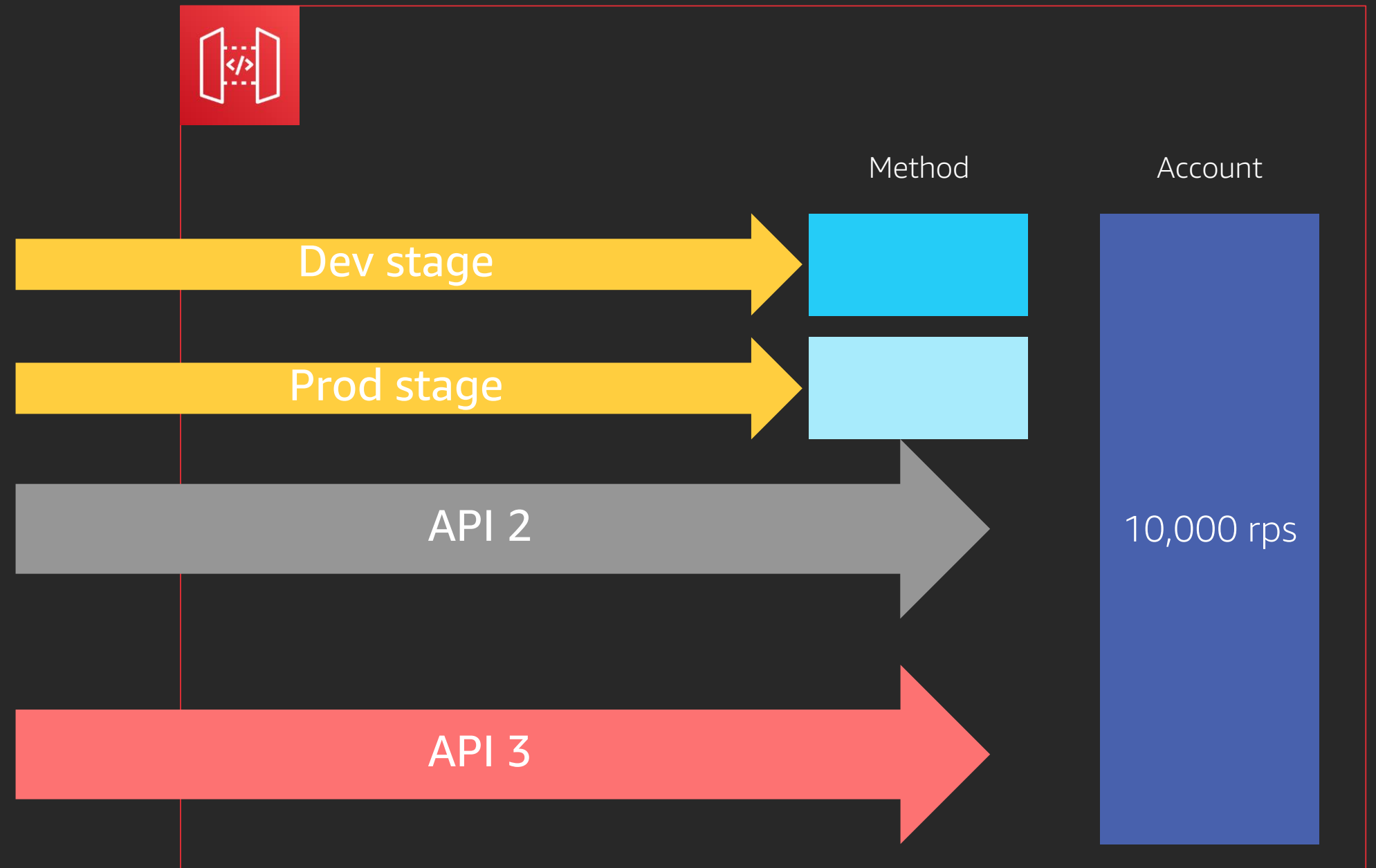
All APIs share an
account-wide
throttling of 10k
requests per second



Throttling

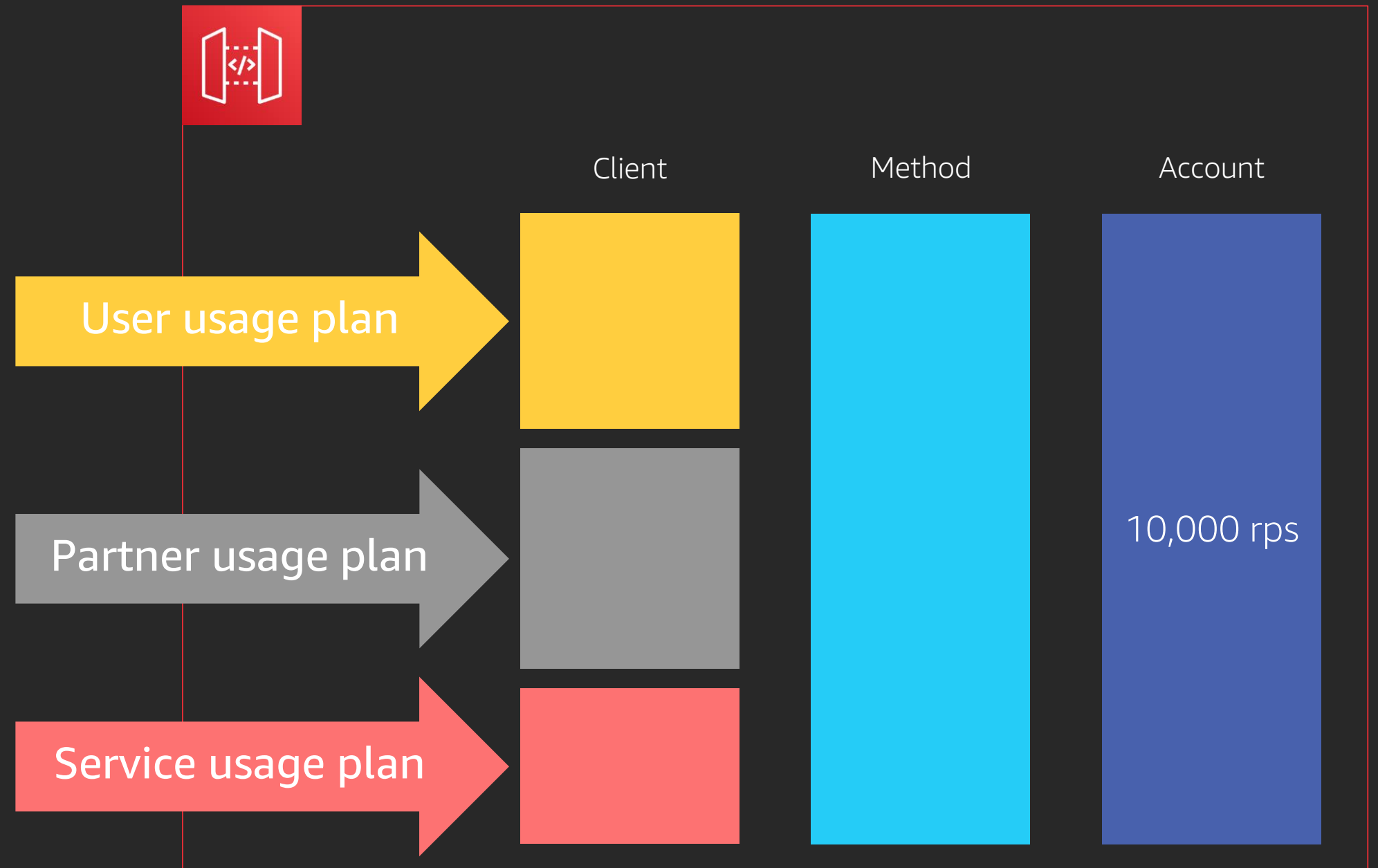
Method-level
overrides can be
added on API stages

Note: Cannot override the
account-level rates



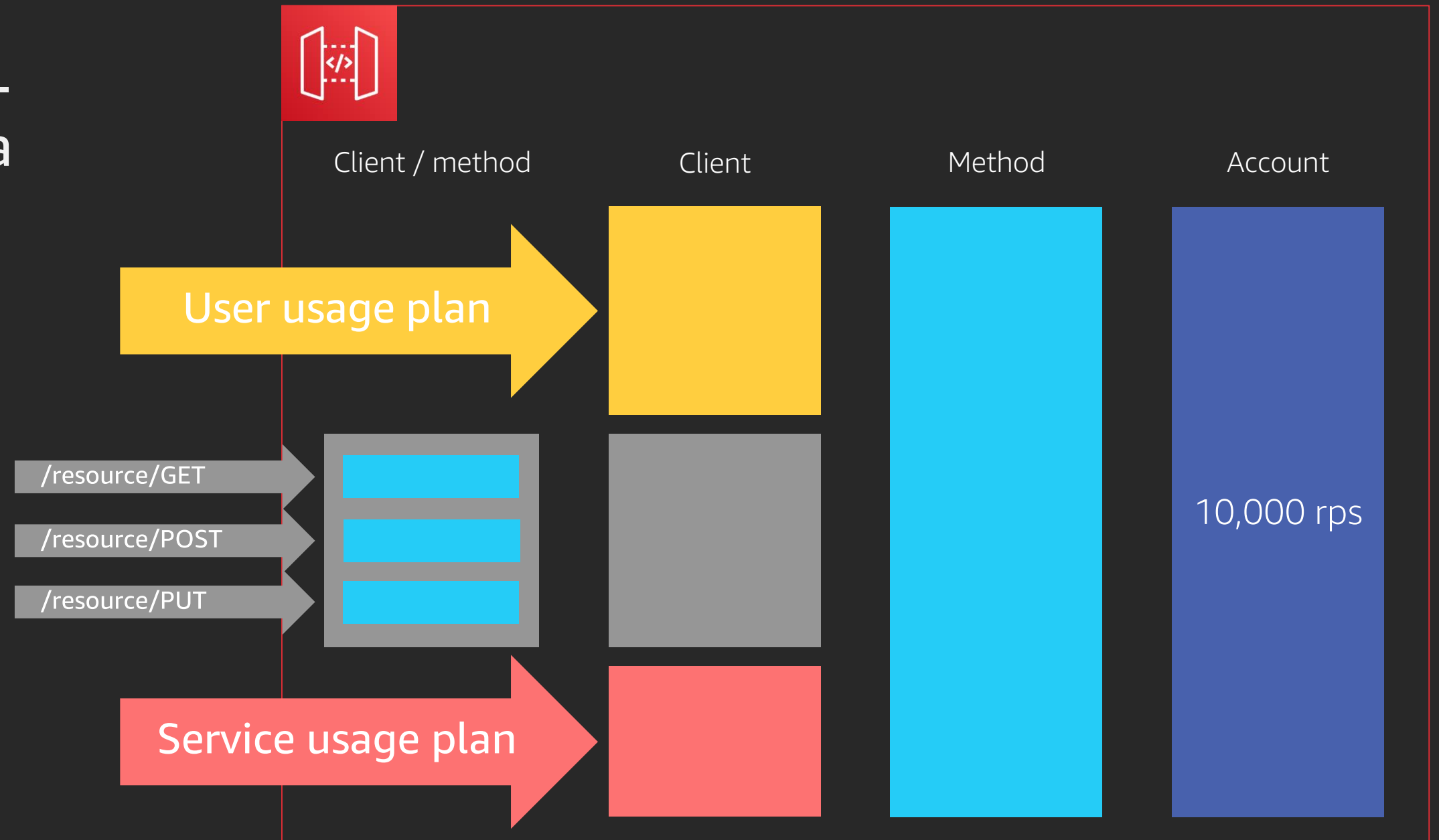
Throttling

Configure API-level
or stage-level
throttling through
a usage plan

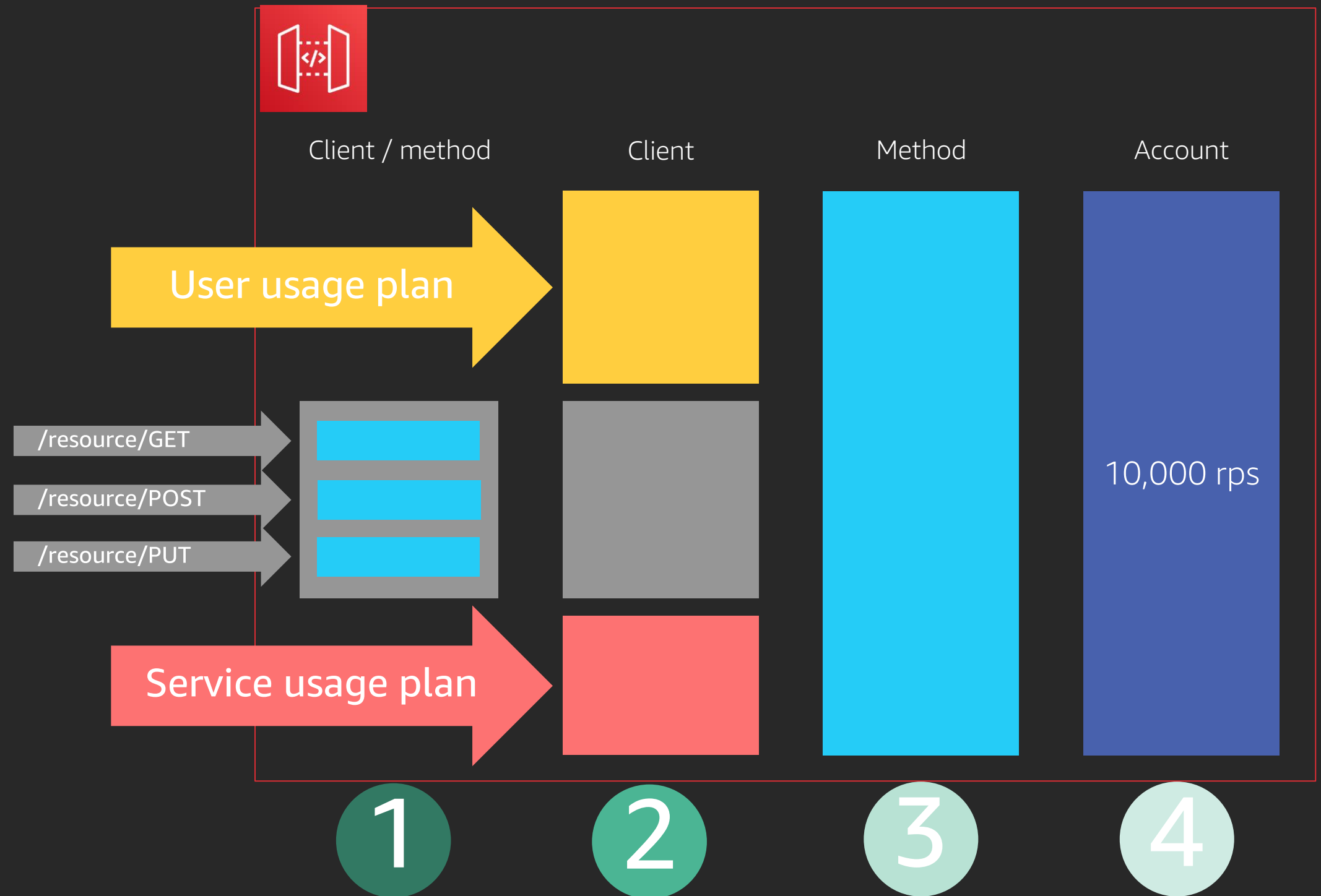


Throttling

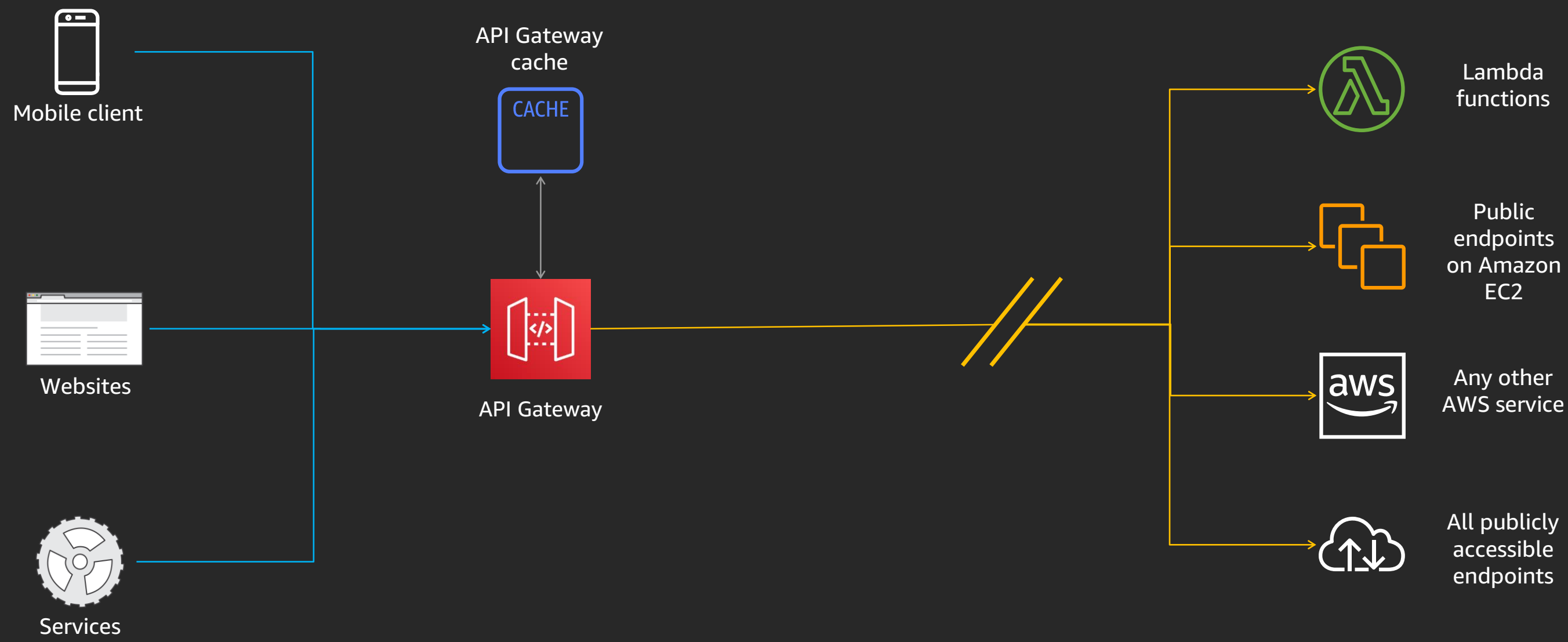
Configure method-level throttling in a usage plan



Throttling



Caching



Miscellaneous

Reduce network calls from Lambda

```
from ssm_cache import SSMPParameter  
param = SSMPParameter('my_param_name')  
value = param.value
```

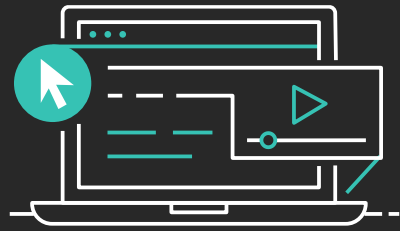
<https://github.com/alexcasalboni/ssm-cache-python>

Ported to go:

<https://github.com/mweagle/ssm-cache>

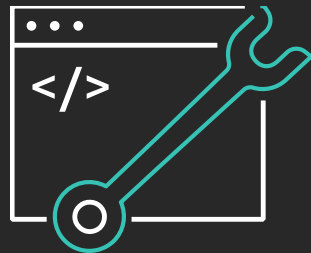
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- Getting into the Serverless Mindset
- AWS Lambda Foundations
- Amazon API Gateway for Serverless Applications
- Amazon DynamoDB for Serverless Architectures



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Thank you!

Nicki Stone

@kneekey23 (Twitter, GitHub, LinkedIn, etc.)



Please complete the session
survey in the mobile app.