



# Multi-Cloud Magic:

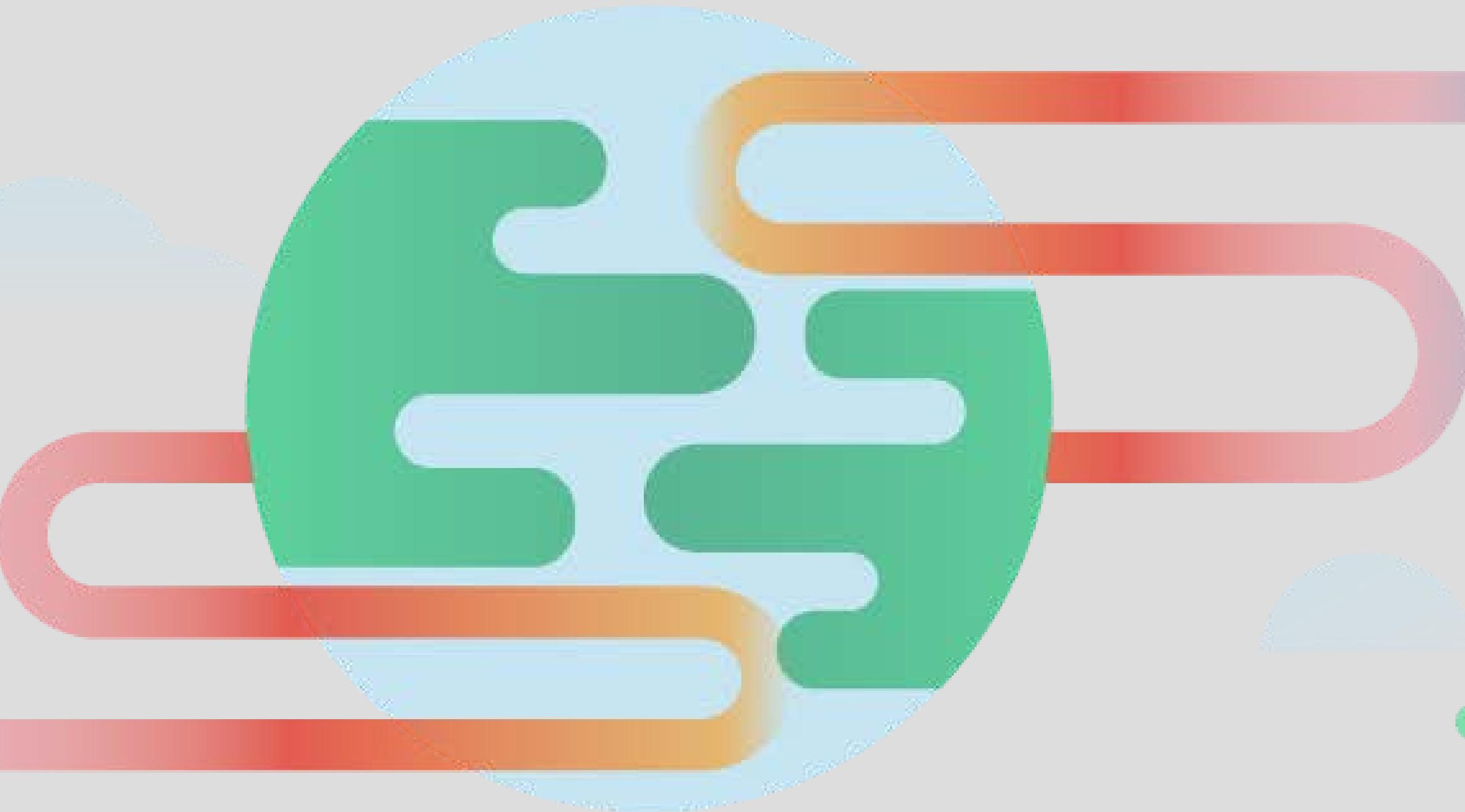
## Leveraging Multi-Cloud Clusters in the Real World

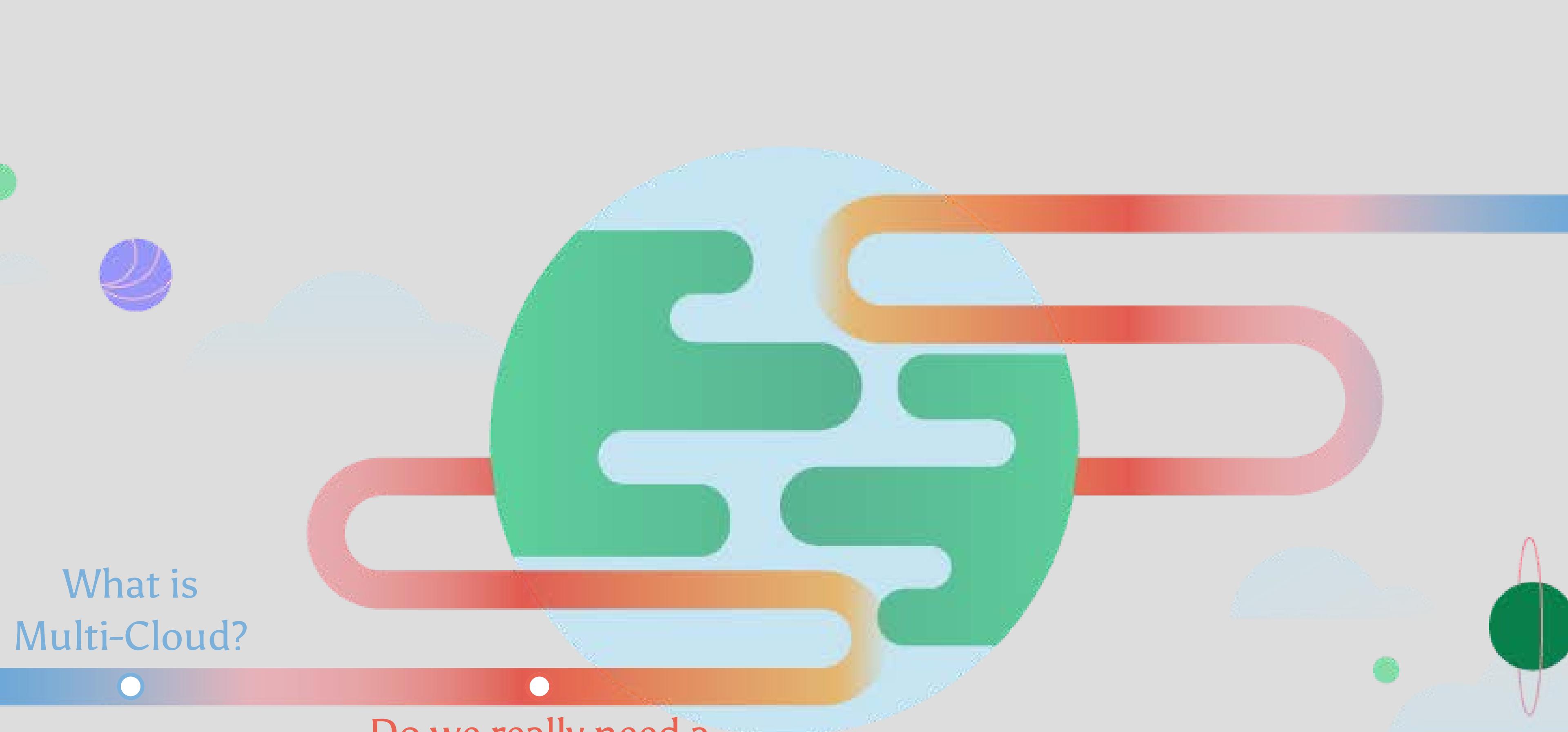


@adriennetacke



# What is Multi-Cloud?



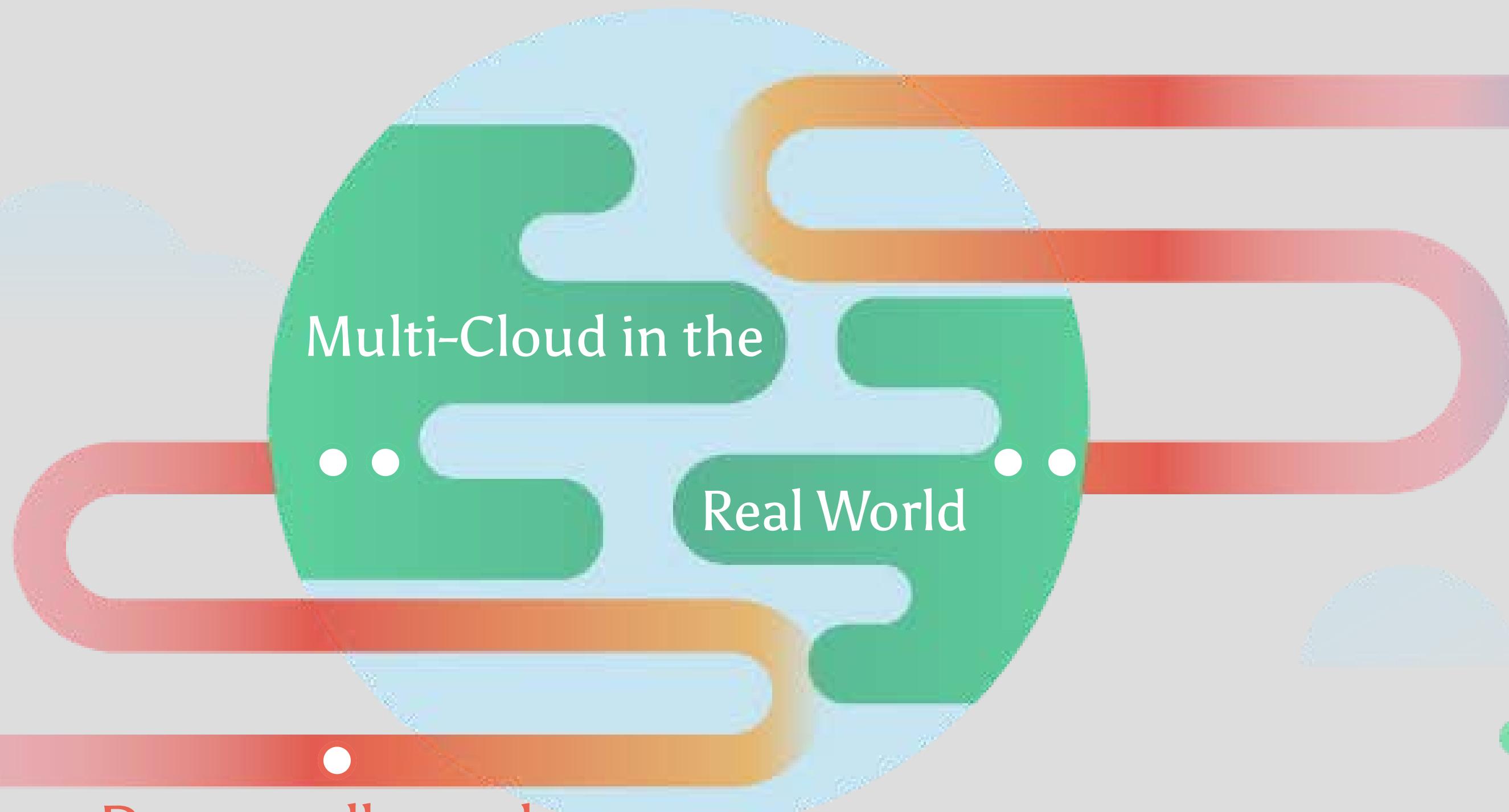


What is  
Multi-Cloud?

Do we really need a  
Multi-Cloud Option?

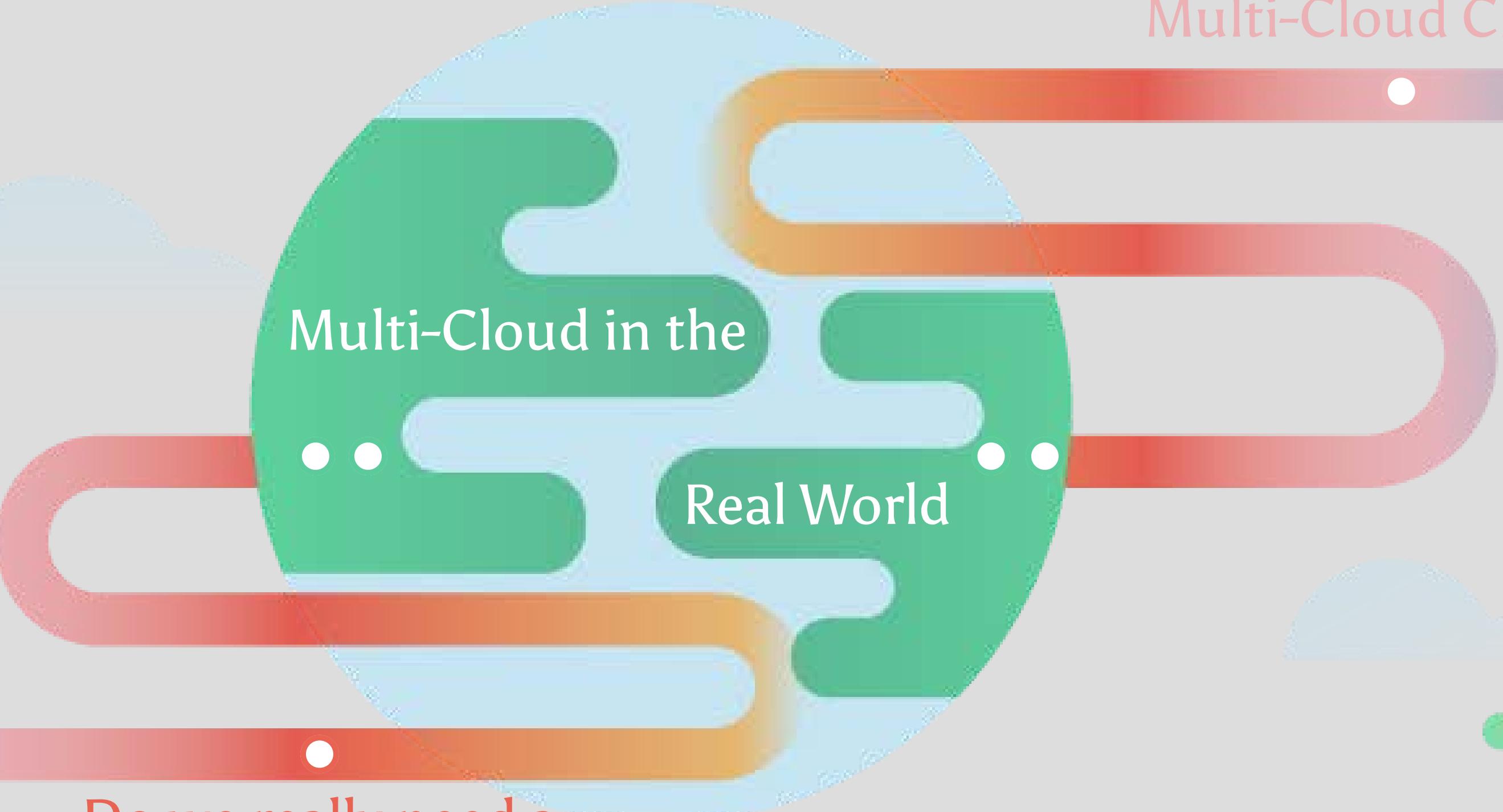
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Multi-Cloud in the  
Real World

Let's set up a  
Multi-Cloud Cluster!



Multi-Cloud in the  
Real World

What is  
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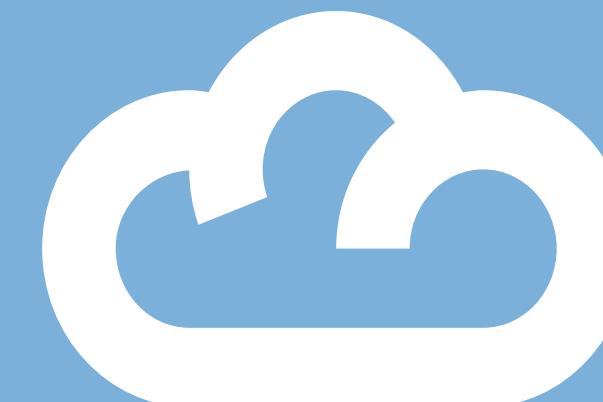
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# What is Multi-Cloud?

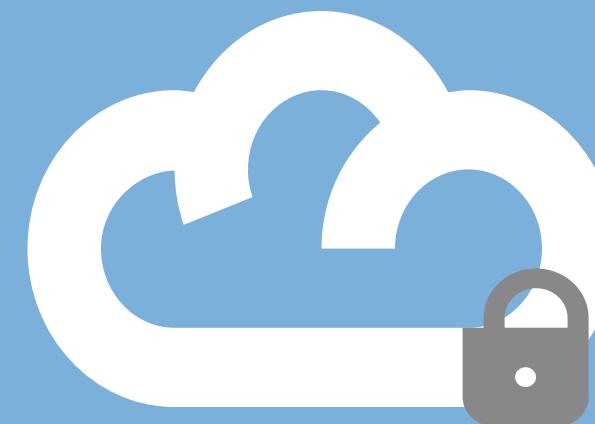
# Multi-Cloud

Any single architecture that  
uses two or more cloud  
providers



# Multi-Cloud

Mixture of clouds, public and private



Do we need a  
Multi-Cloud Option?

W I R E D

# The Catch-22 That Broke the Internet

A Google Cloud outage that knocked huge portions of the internet offline also blocked access to the tools Google needed to fix it.

BRIAN BARRETT

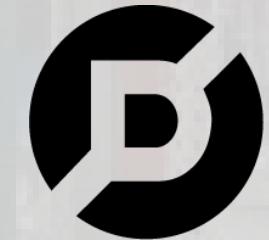
SECURITY

06.07.2019 12:26 PM



# **When Things go Awry in the Cloud: A Closer Look at a Recent AWS Outage**

**29th OCTOBER 2019**



**CIO DIVE**

# Understanding Google Cloud's recent service hiccups

By Roberto Torres

Published March 27, 2020

A faint, multi-colored background image of a person wearing a surgical mask, looking down at a laptop screen. The colors are soft and pastel-like.

**ComputerWeekly.com**

# Coronavirus: Microsoft Azure suffers datacentre capacity shortages in Europe

Microsoft is working to “expedite” additional datacentre capacity after reports of users struggling to access resources due to coronavirus demand surge. But how easy will that be amid a global pandemic?

By Caroline Donnelly, Senior Editor, UK   Published: 07 Apr 2020 9:02



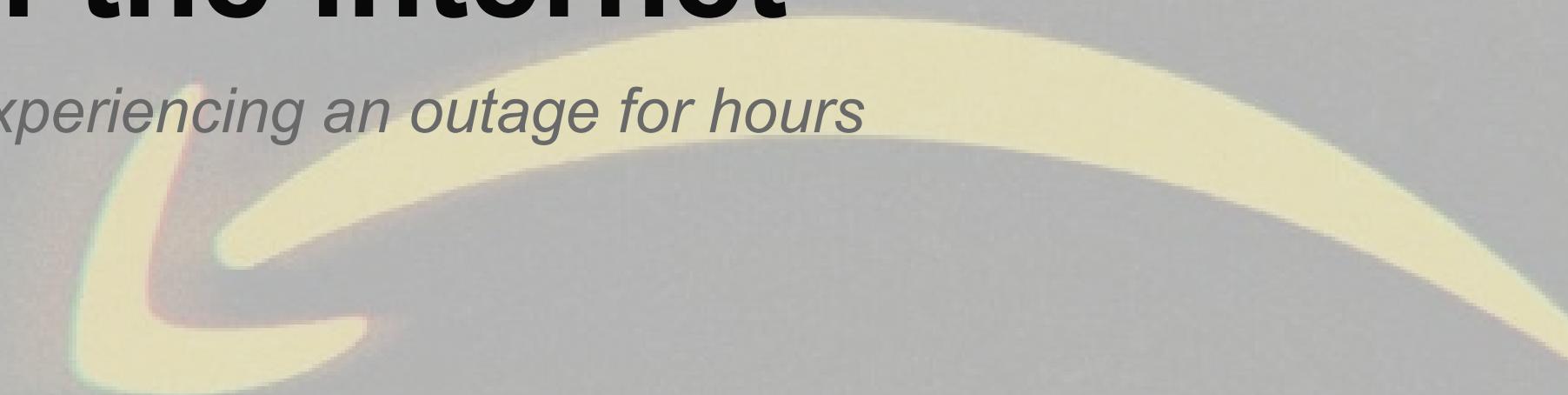
# Azure Goes Down in APAC, as Infrastructure Bottlenecks Continue to Trouble Microsoft

15th JUNE 2020

**THE VERGE**

# Prolonged AWS outage takes down a big chunk of the internet

*AWS has been experiencing an outage for hours*



By Jay Peters | @jaypeters | Updated Nov 25, 2020, 5:39pm EST



JUN 2019

OCT 2019

MAR 2020

JUN 2020

NOV 2020

WIRED

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CBR  
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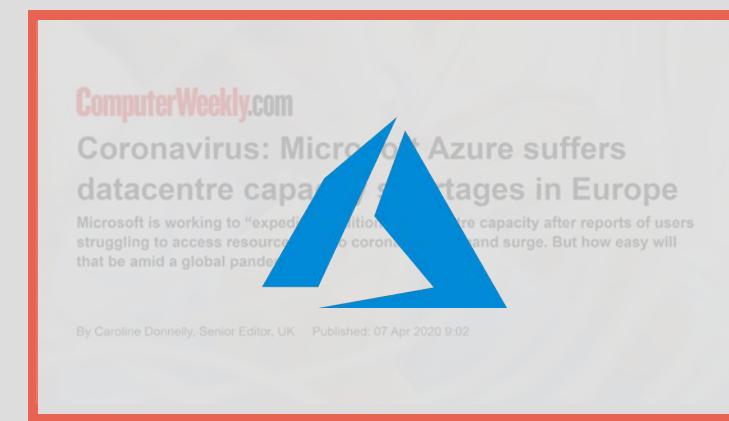
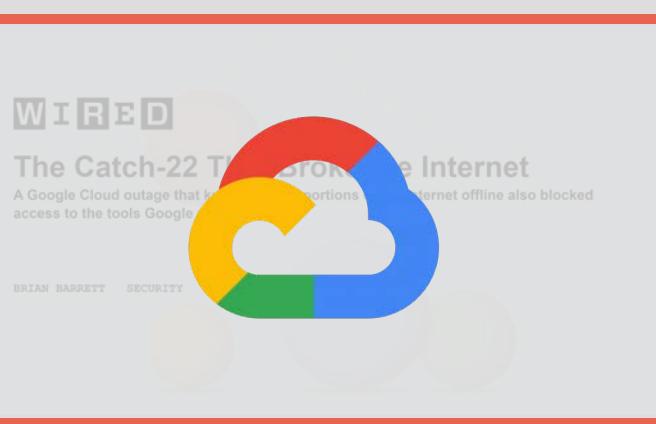
JUN 2019

OCT 2019

MAR 2020

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NOV 2020



# No cloud is spared from outages



“

The main driver is what our clients are asking for.

We have banks who have an Azure preference; we have banks who have an AWS preference, Google Cloud, and on and on. We don't really get to choose.



Gregory Scher - VP Business Platform Technology, Fiserv

“

We have to be native AWS because of...their advanced capabilities in analytics. And we have to be in Azure because, frankly, developers love that ecosystem, and productive developers are probably the best thing.



Mohan Putcha - Vice President, Architecture & Digital Strategy, Aon

# Multi-Cloud in the Real World

# Canada: Direction for Electronic Data Residency



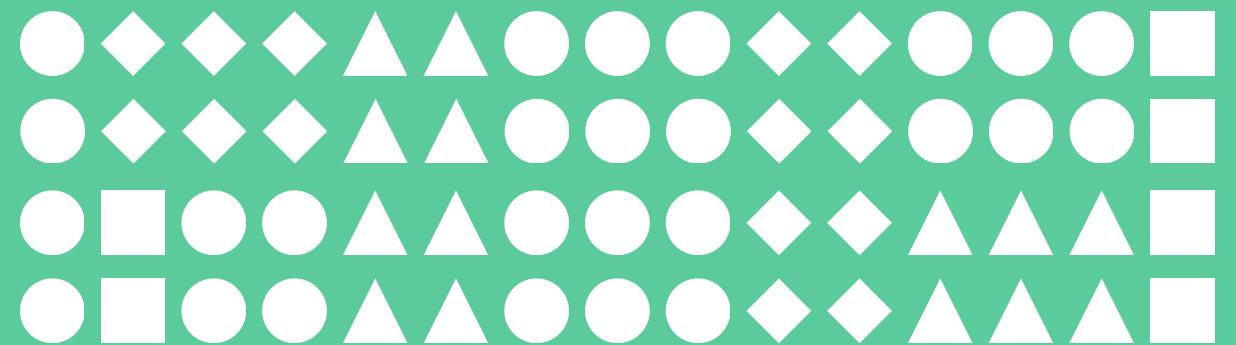
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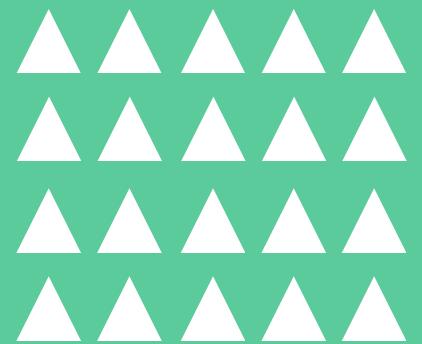
# Canada: Direction for Electronic Data Residency

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British Columbia & Nova Scotia



Ontario

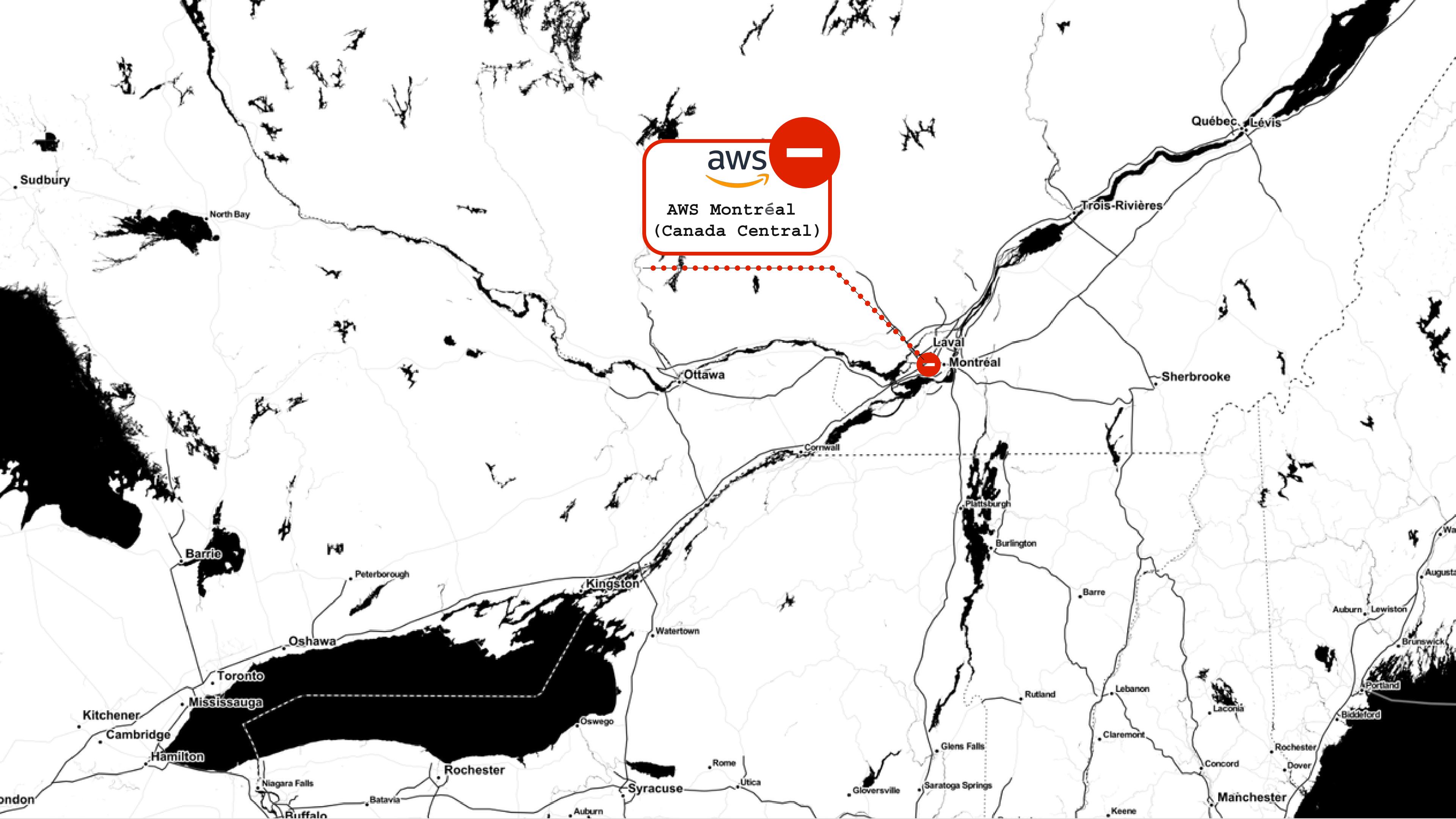




AWS Montréal  
(Canada Central)



AWS Montréal  
(Canada Central)





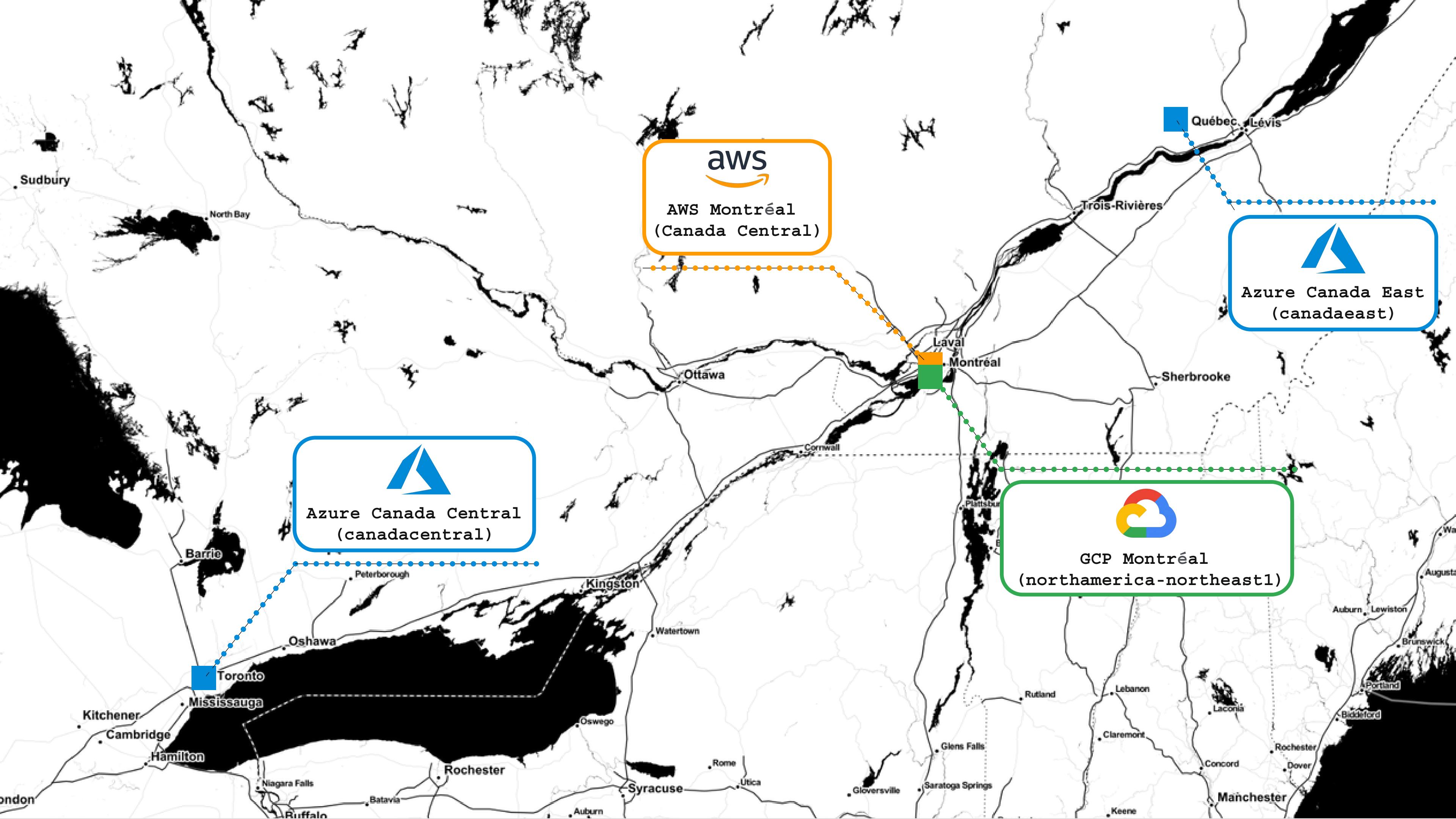
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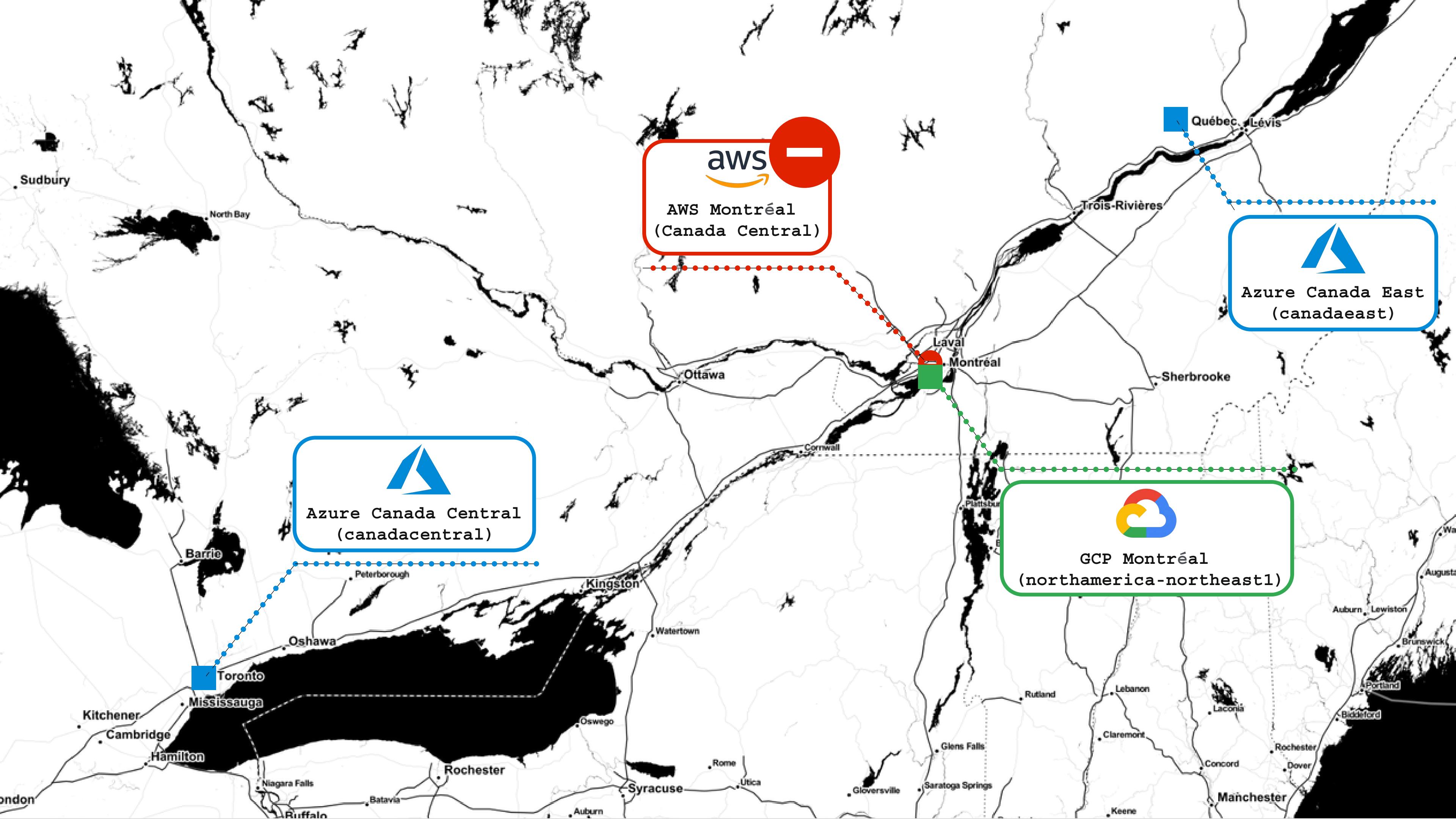


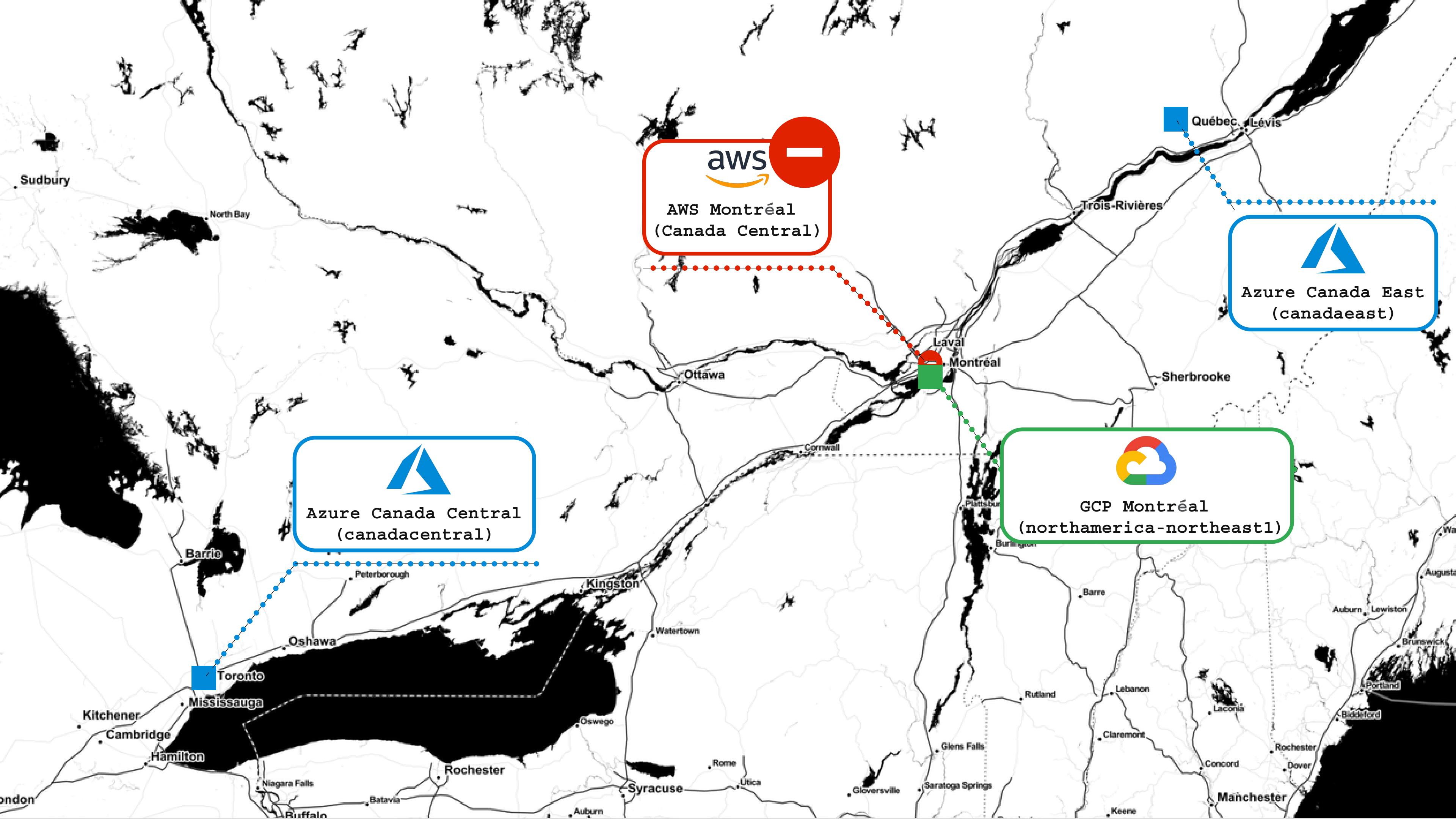
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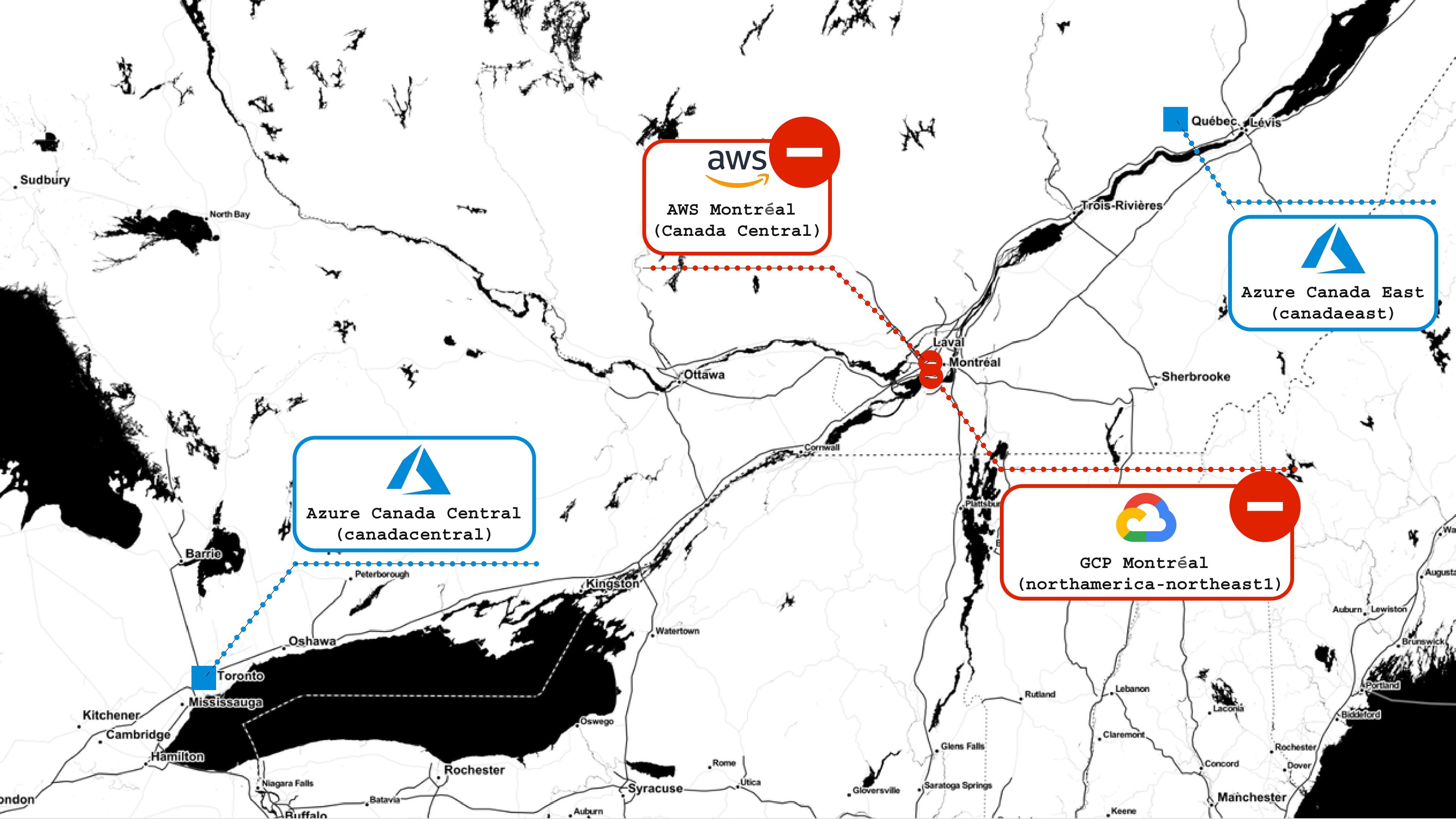


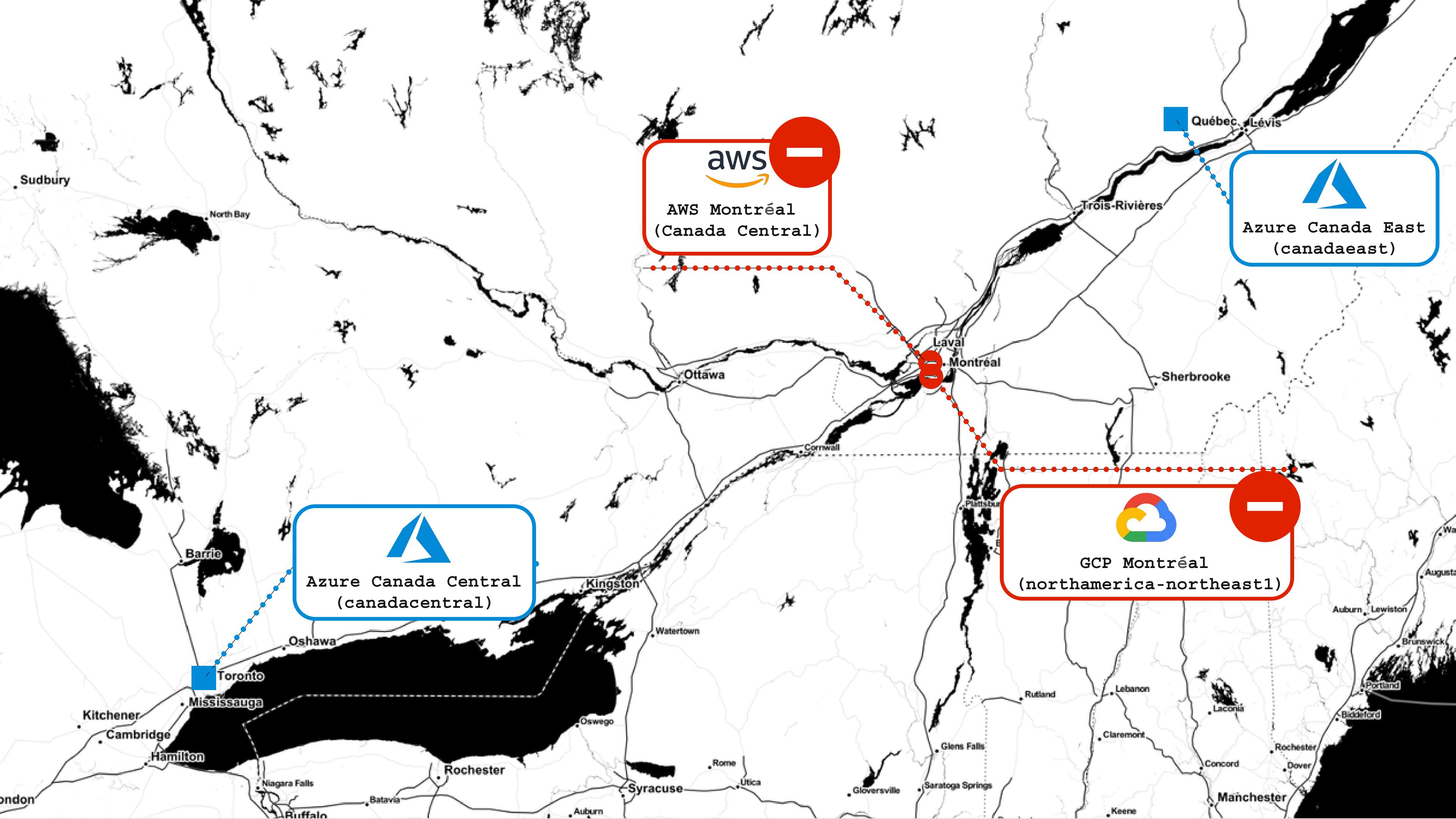
GCP Montréal  
(northamerica-northeast1)











AWS Montréal  
(Canada Central)



Azure Canada East  
(canadaeast)



Azure Canada Central  
(canadacentral)



GCP Montréal  
(northamerica-northeast1)

# Canada: Direction for Electronic Data Residency

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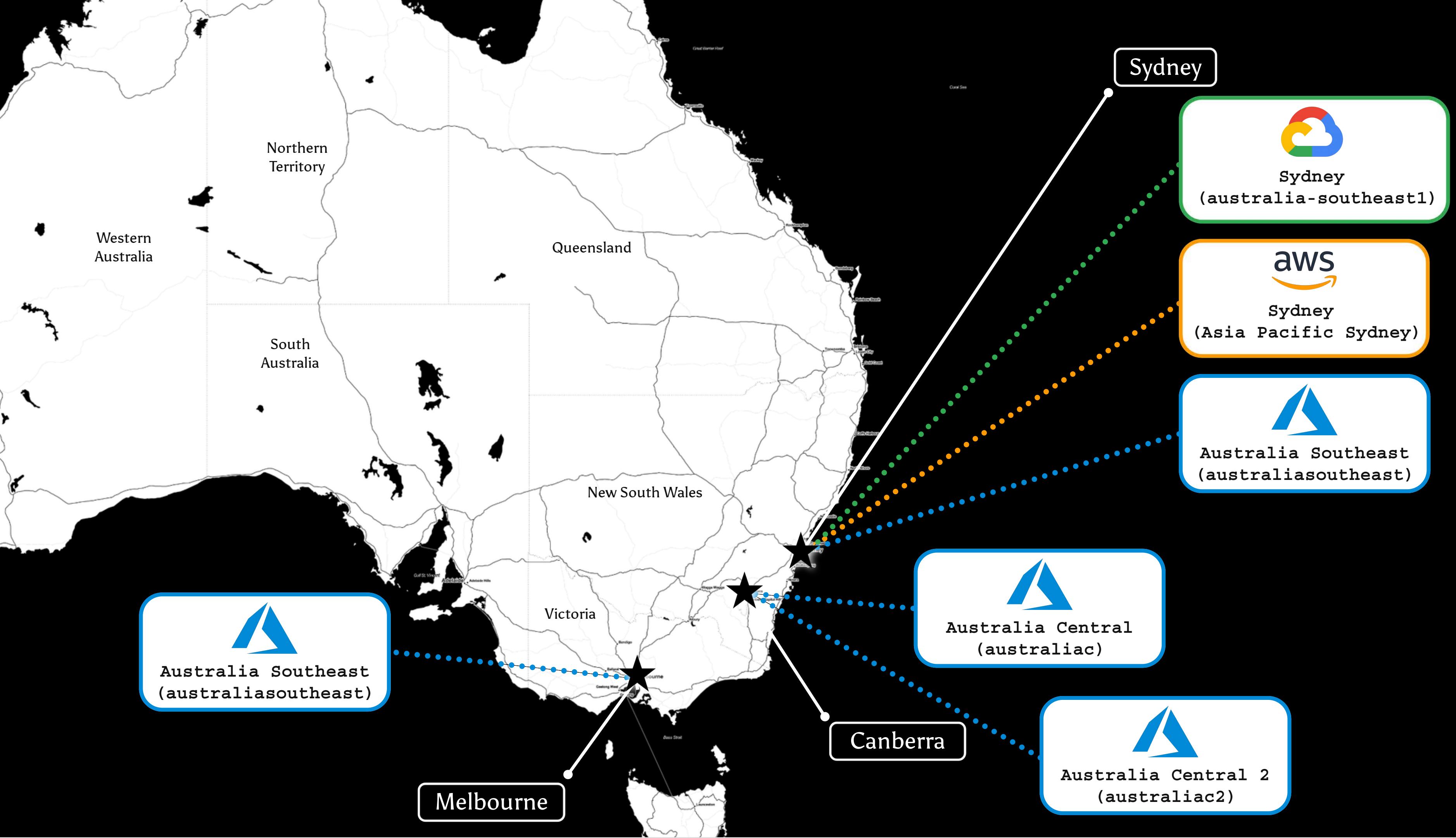
<https://www.canada.ca/en/government/system/digital-government/digital-government-innovations/cloud-services/direction-electronic-data-residency.html>



# Australia: My Health Records Act 2012

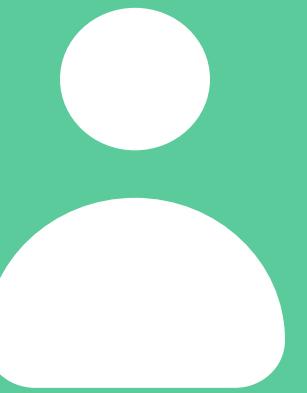
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<https://www.legislation.gov.au/Details/C2020C00372>



# Best of All Clouds

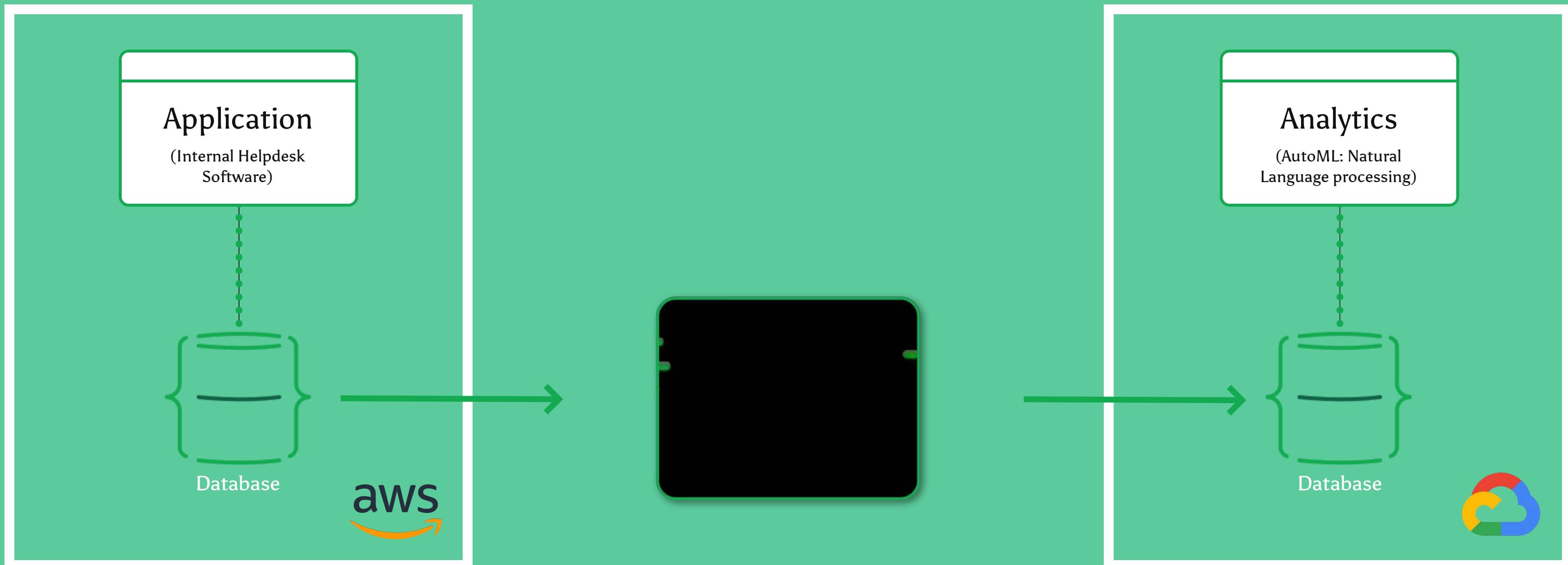
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Recommendation Feature



# Best of All Clouds



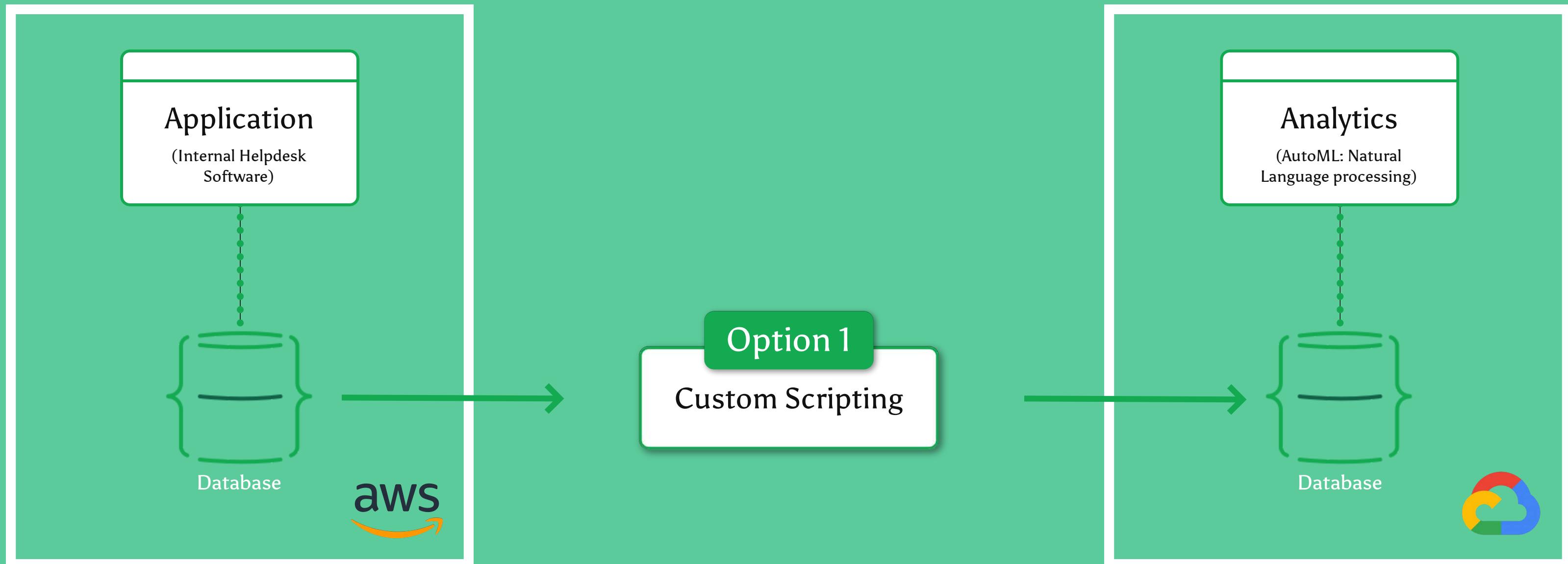
Recommendation Feature



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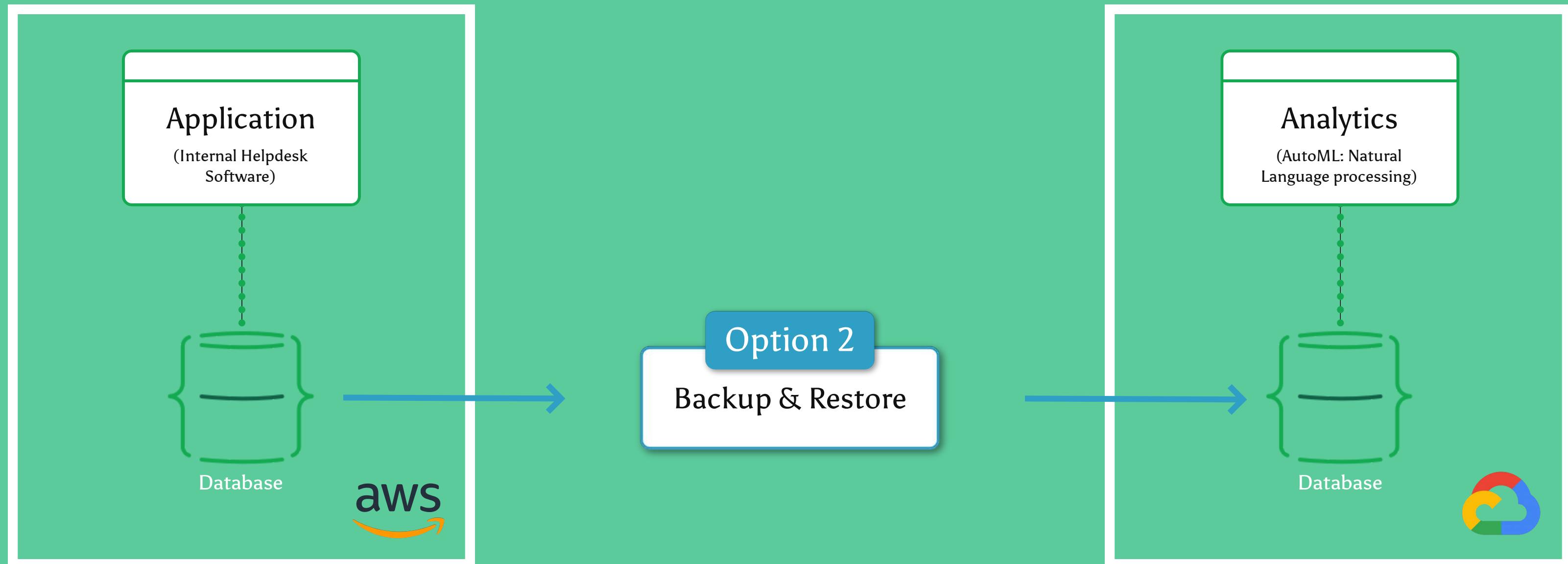
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# Best of All Clouds



Recommendation Feature



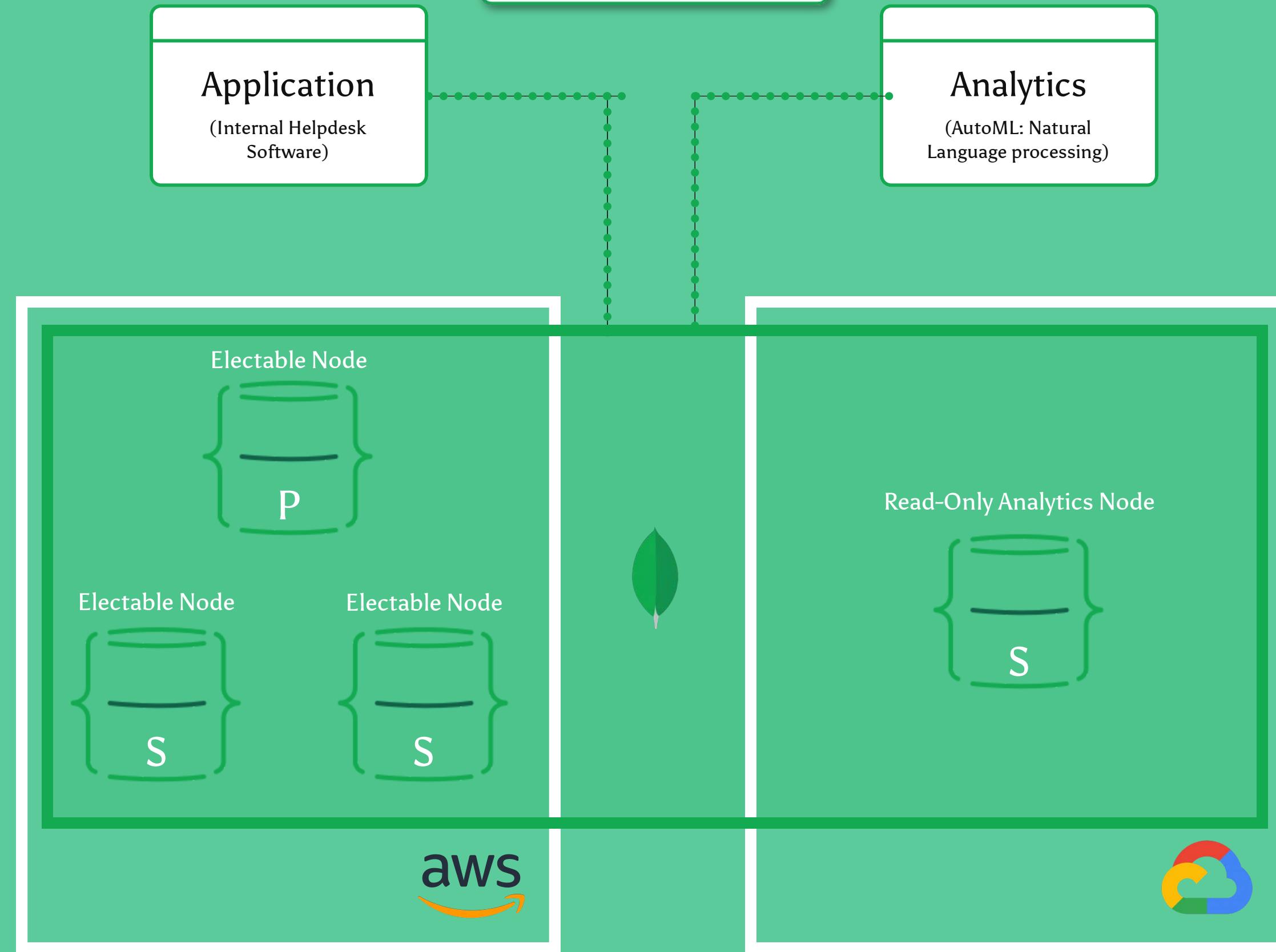
# Best of All Clouds

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Recommendation Feature

Option 3

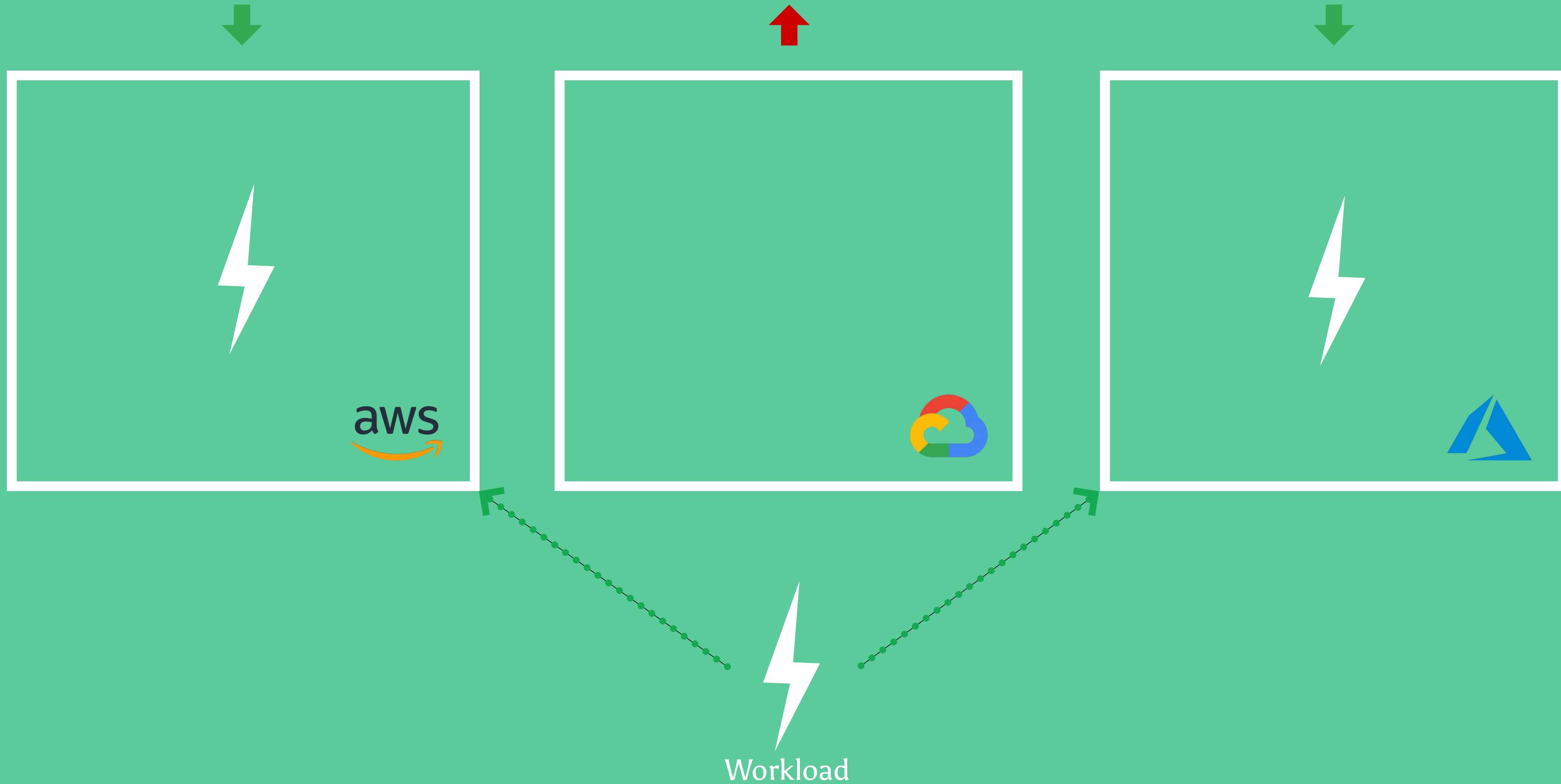
Multi-Cloud Cluster



# Best of All Clouds



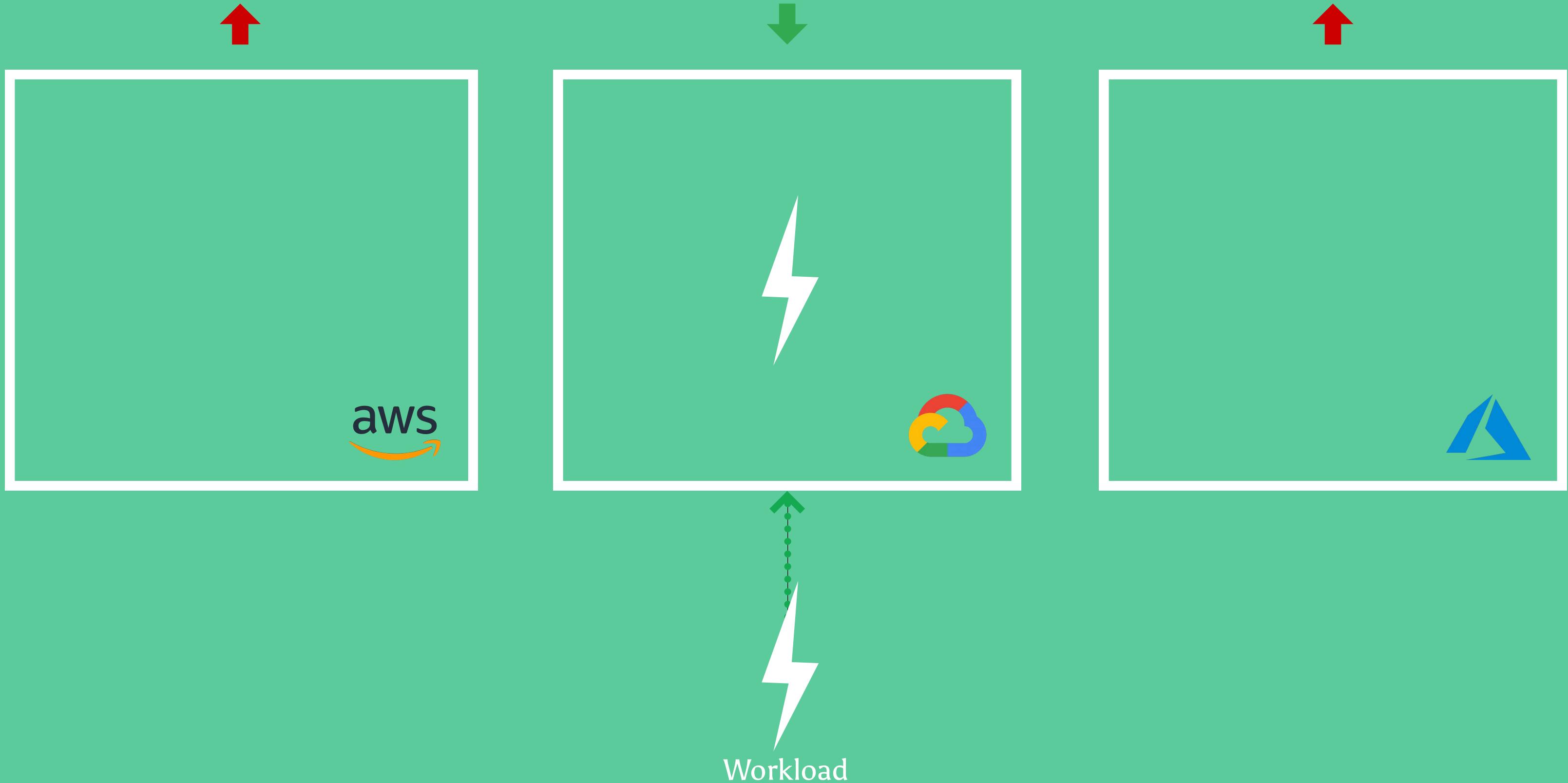
Cloud Arbitrage / Cost Optimization



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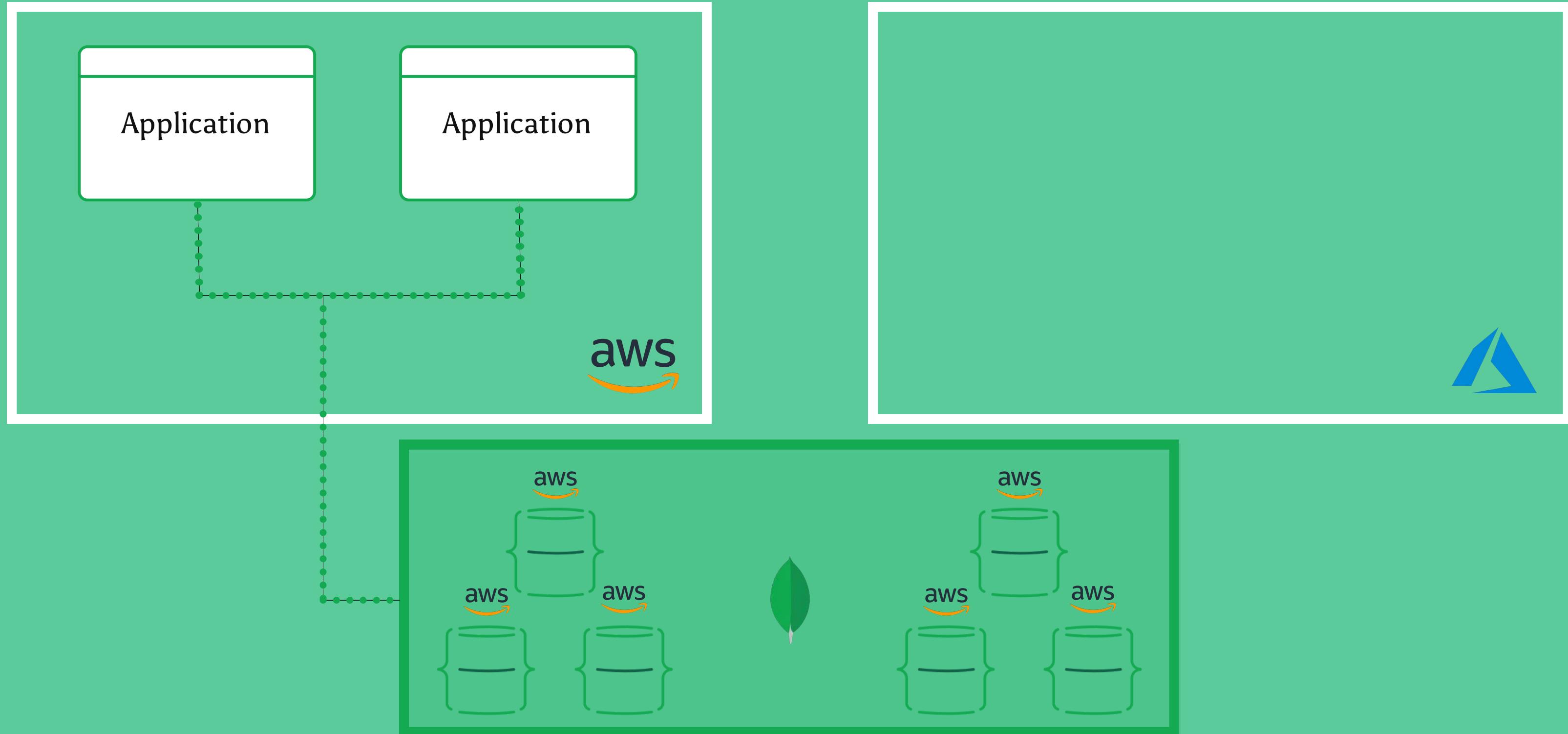
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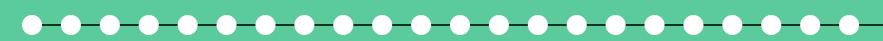
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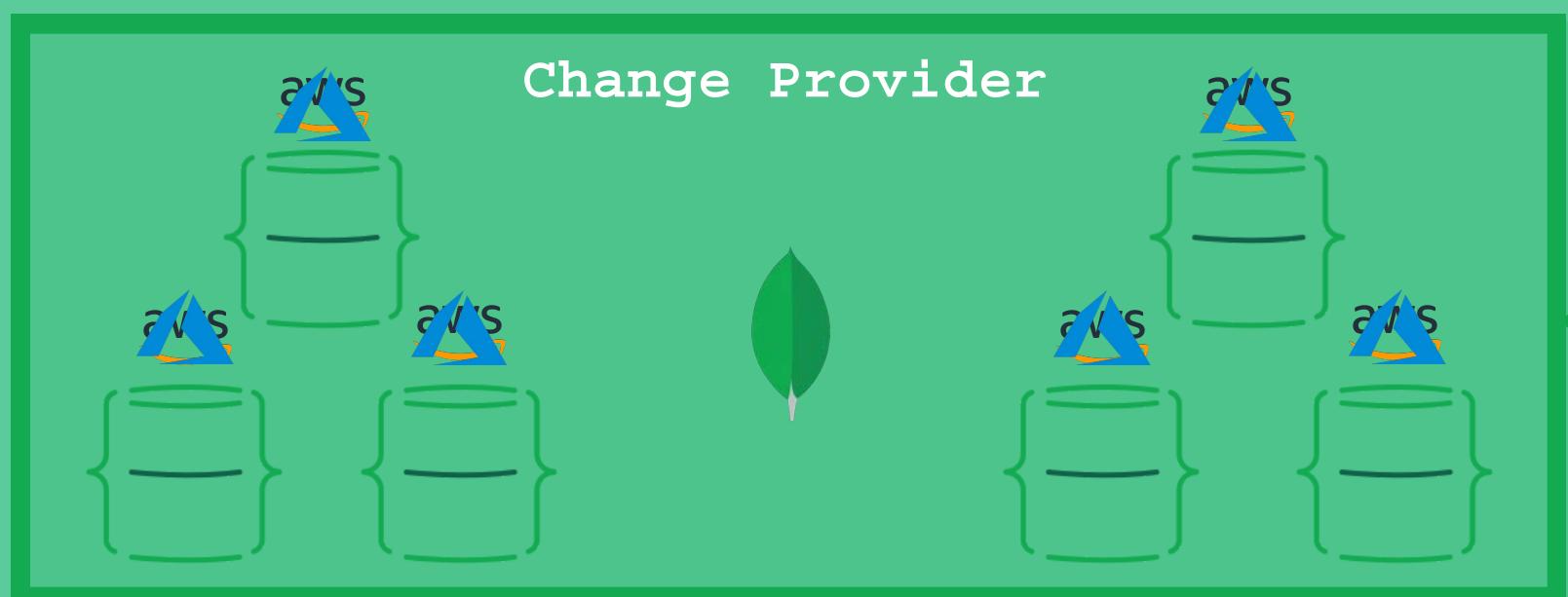
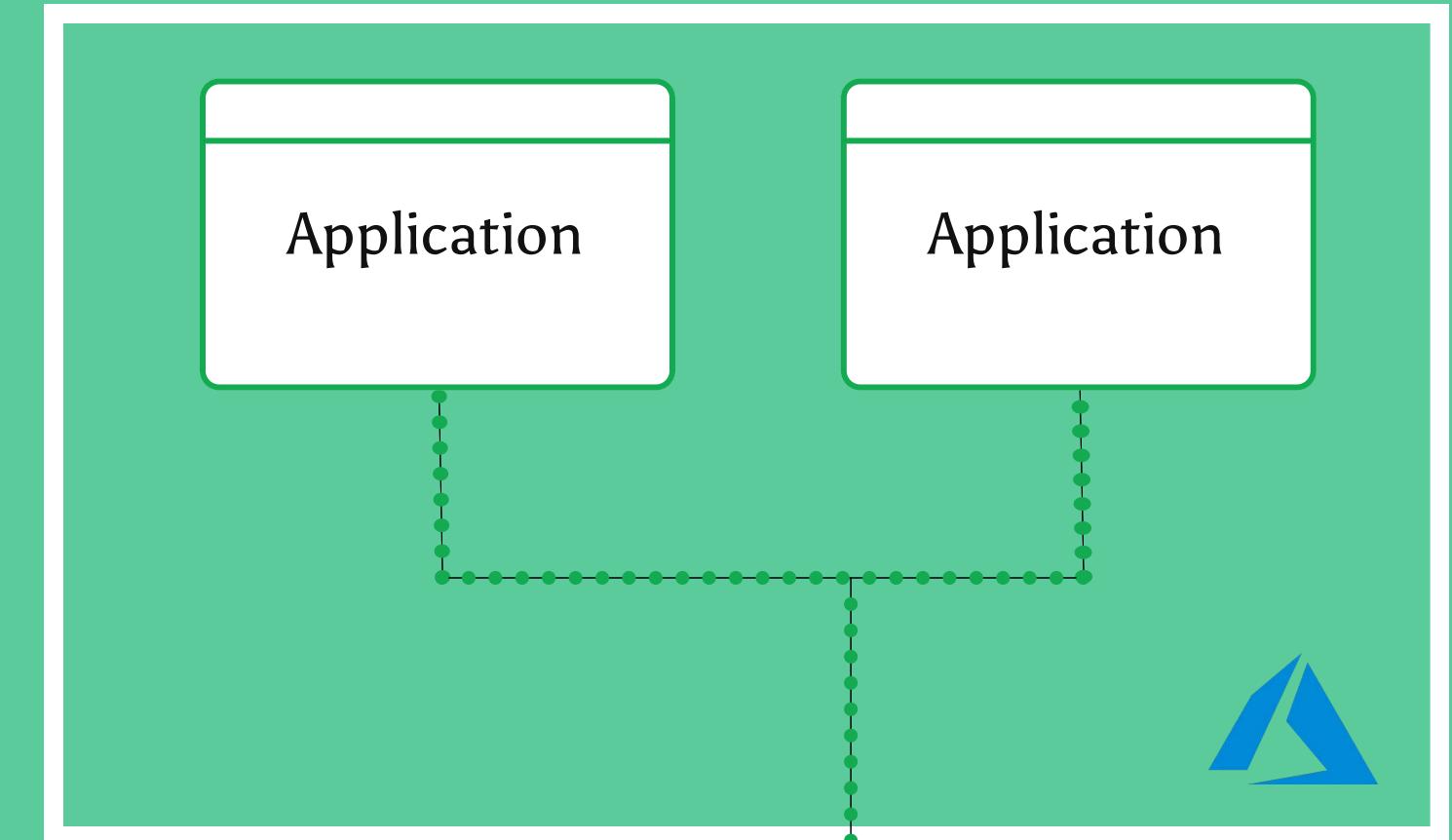
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Cloud Arbitrage / Cost Optimization

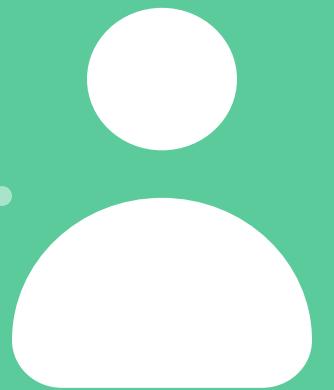


# Best of All Clouds

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Recommendation Feature, Cloud Arbitrage / Cost  
Optimization

# Developers' Choice

•••••••••••  
All industries



# Developers' Choice

.....

All industries

We want to use the best tools for the job

We're responsible for even higher availability and lower-latency

We're striving to be cloud-agnostic



AWS Lambda  
Amazon S3  
Amazon CloudFront



Auto ML  
Vision AI  
AI Platform

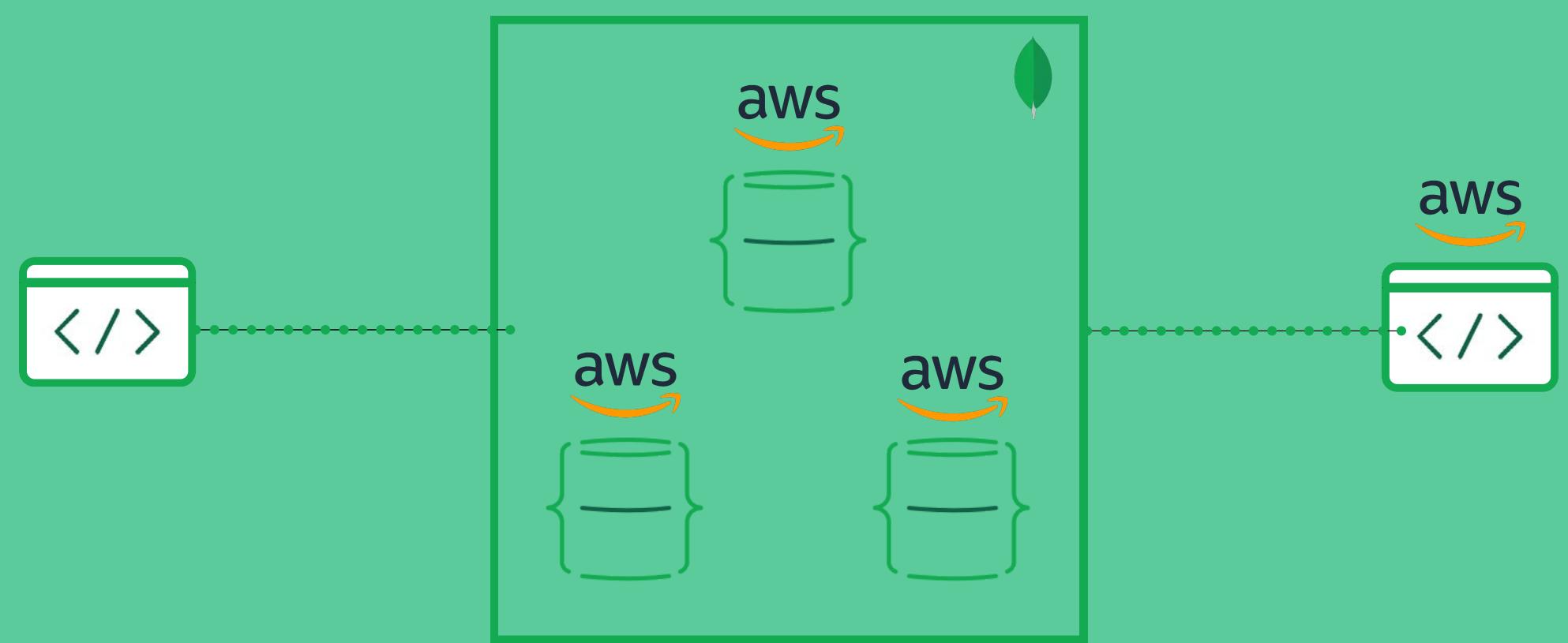


Azure DevOps  
Azure VMs  
Azure Active Directory

25+ Geographic Regions

24+ Geographic Regions

60+ Geographic Regions

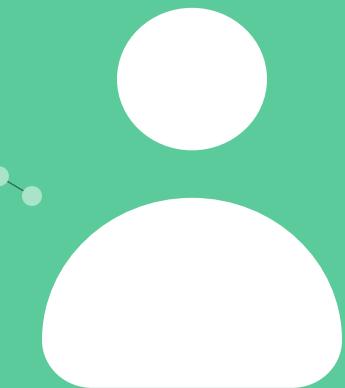


# Best of All Clouds

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Recommendation Feature, Cloud Arbitrage / Cost  
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# Developers' Choice

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All industries



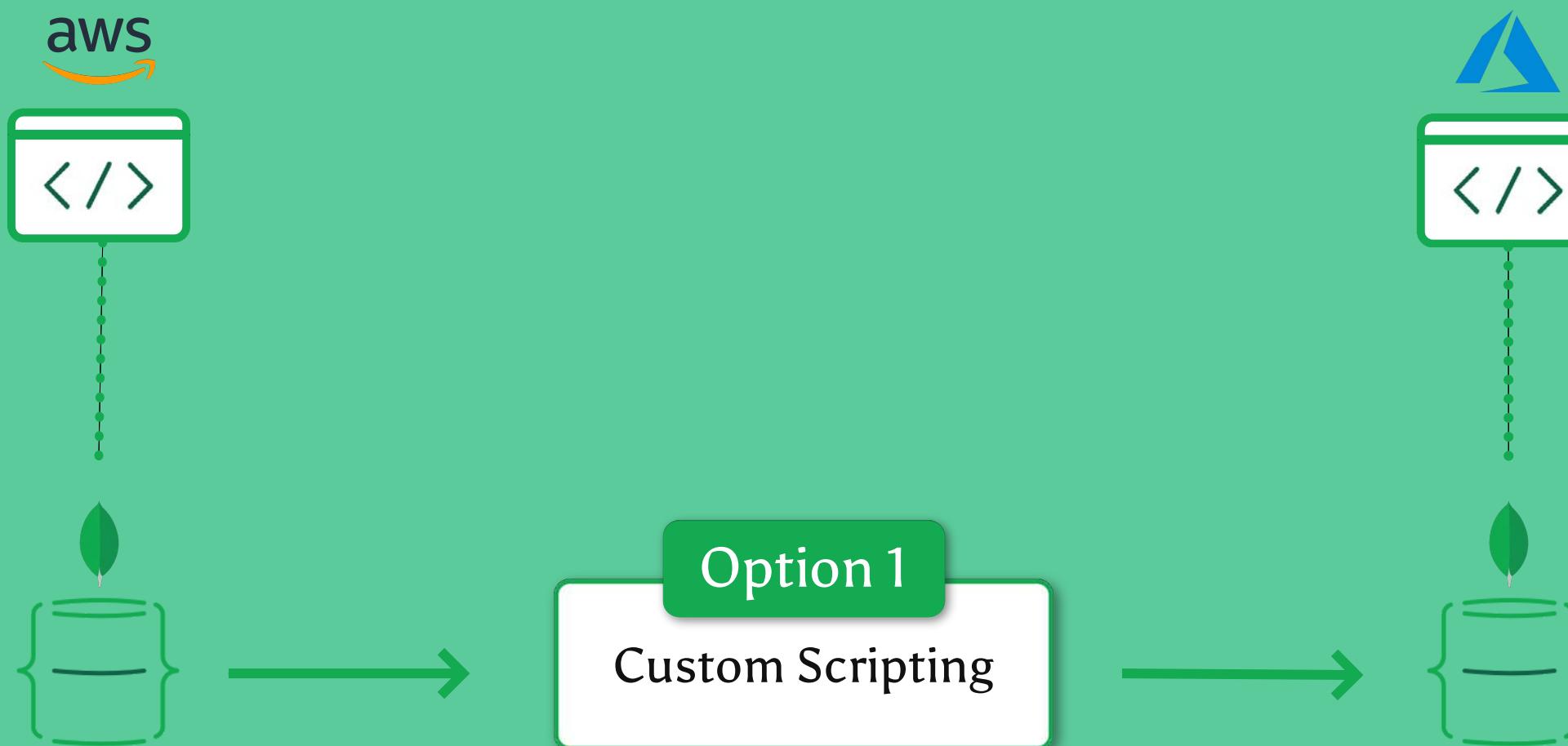
# Future-proof

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Mergers & Acquisitions

# Future-proof



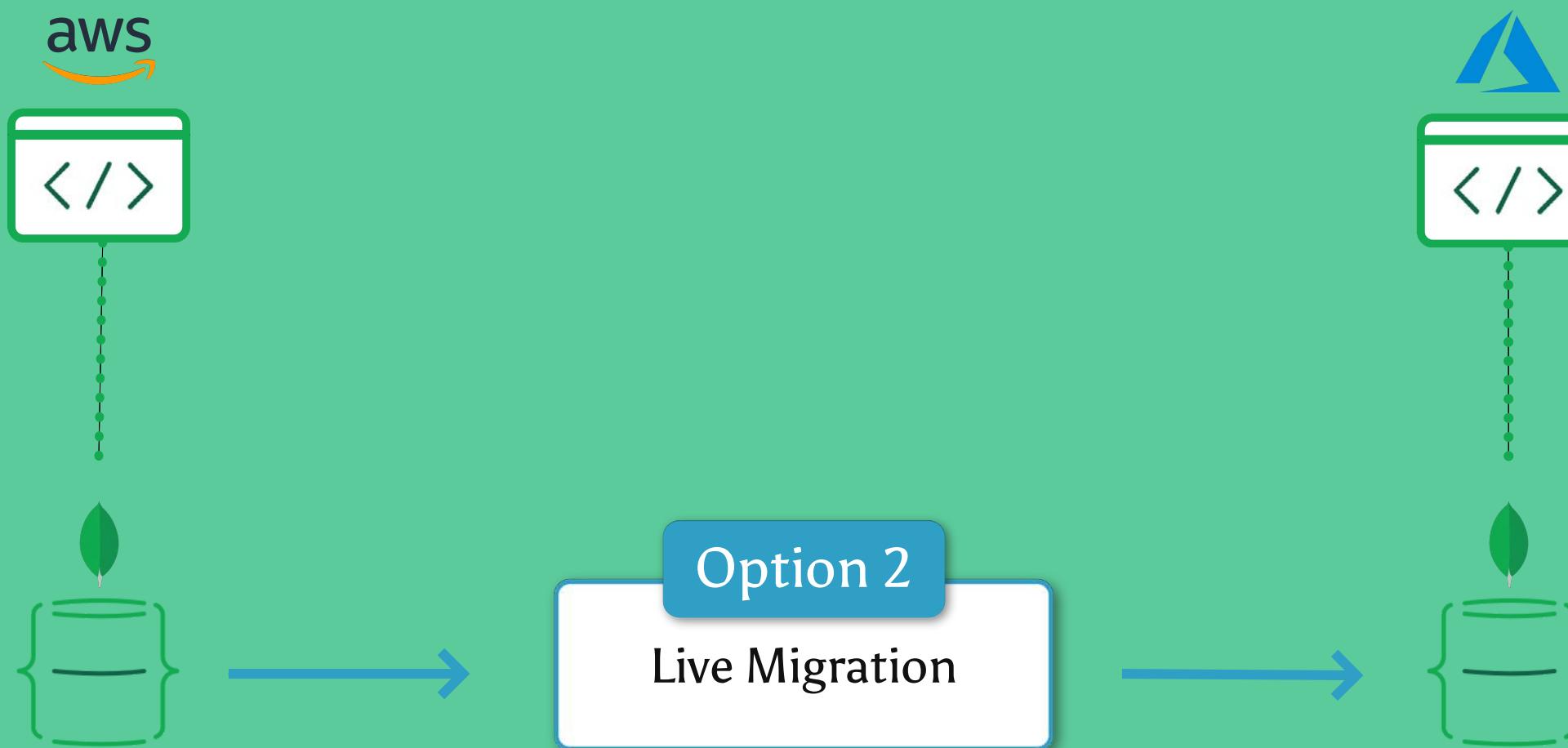
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# Future-proof

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Mergers & Acquisitions

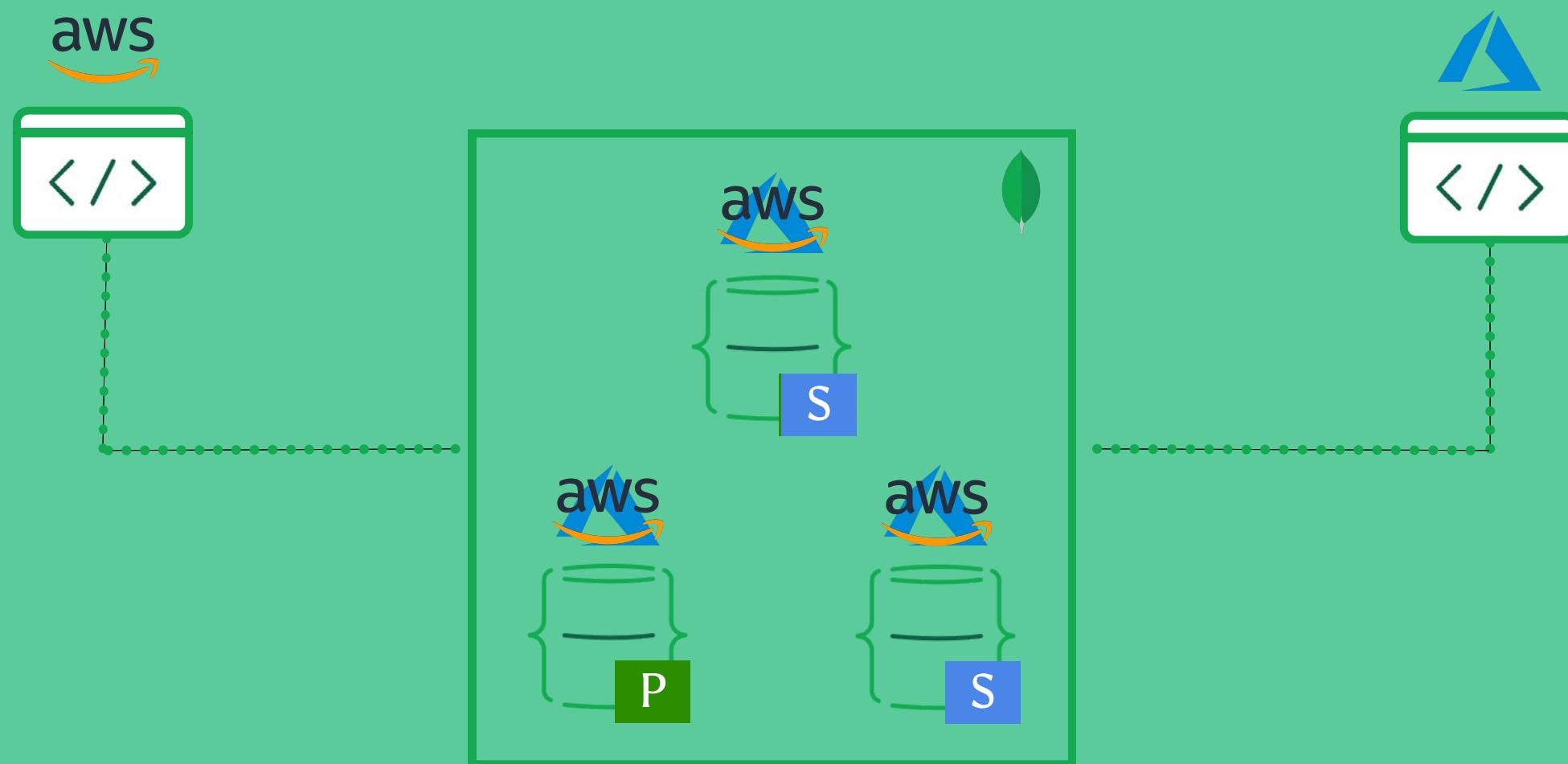


# Future-proof

Mergers & Acquisitions

Option 3

Multi-Cloud Cluster



## Best of All Clouds

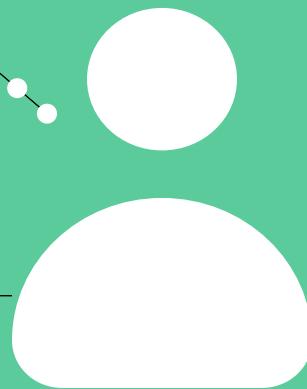
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Recommendation Feature, Cloud Arbitrage / Cost Optimization

## Developers' Choice

••••••••••••••  
All industries

## Future-proof

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Mergers & Acquisitions



# Multi-Cloud in the Real World

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## Australia: My Health Records Act 2012

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<https://www.legislation.gov.au/Details/C2020C00372>

“

If you want to start to have true portability of applications, obviously, the data has to go with the application.



Bradd Lewis - VP & Global Lead, Business & IT Transformation, Dell Technologies

# Building a Multi-Cloud Cluster

😊 Salamat!



# Multi-Cloud Magic:

Leveraging Multi-Cloud Clusters in the Real World