

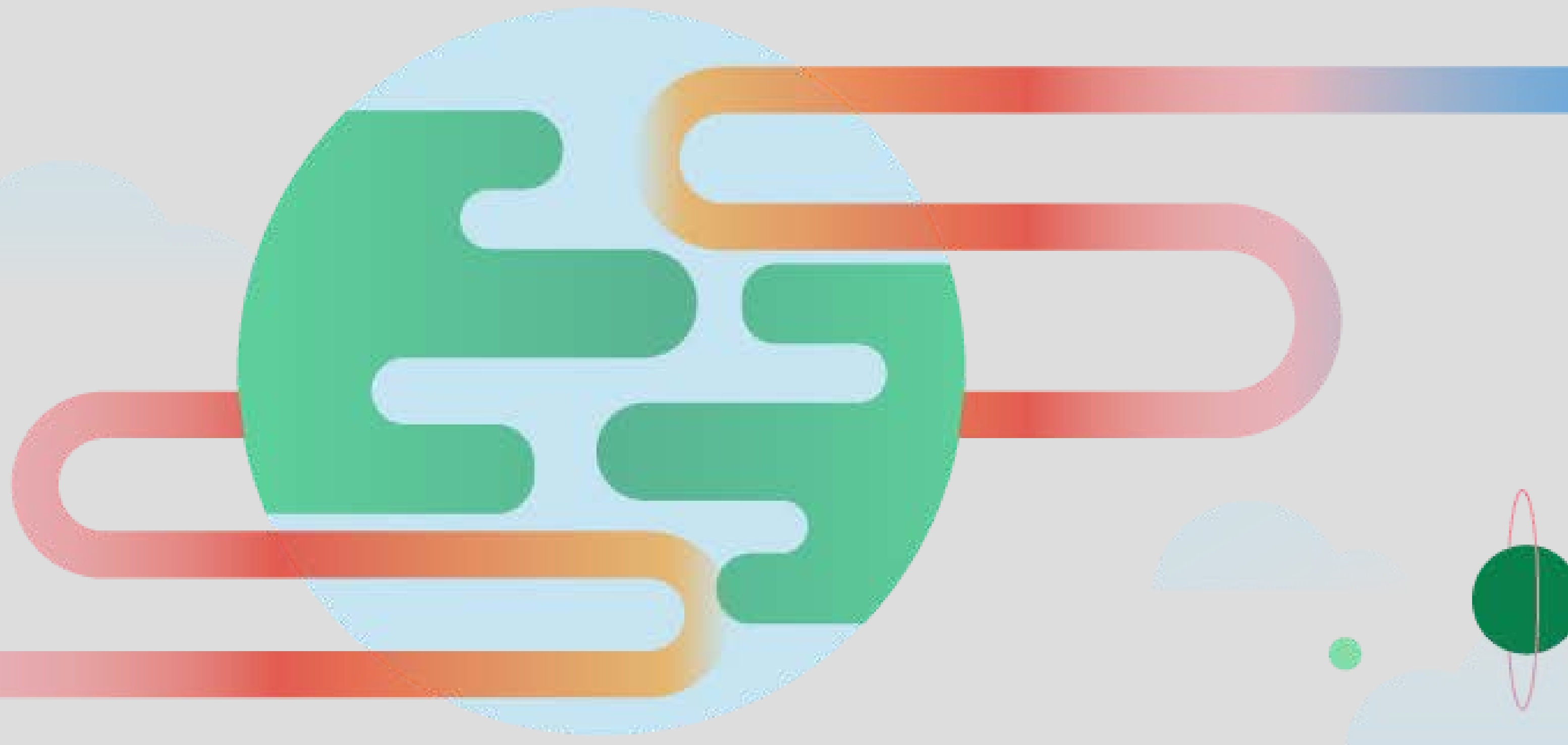


Multi-Cloud Magic:

Leveraging Multi-Cloud Clusters in the Real World



What is Multi-Cloud?



What is
Multi-Cloud?

Do we really need a
Multi-Cloud Option?



What is
Multi-Cloud?

Multi-Cloud in the

Real World

Do we really need a
Multi-Cloud Option?

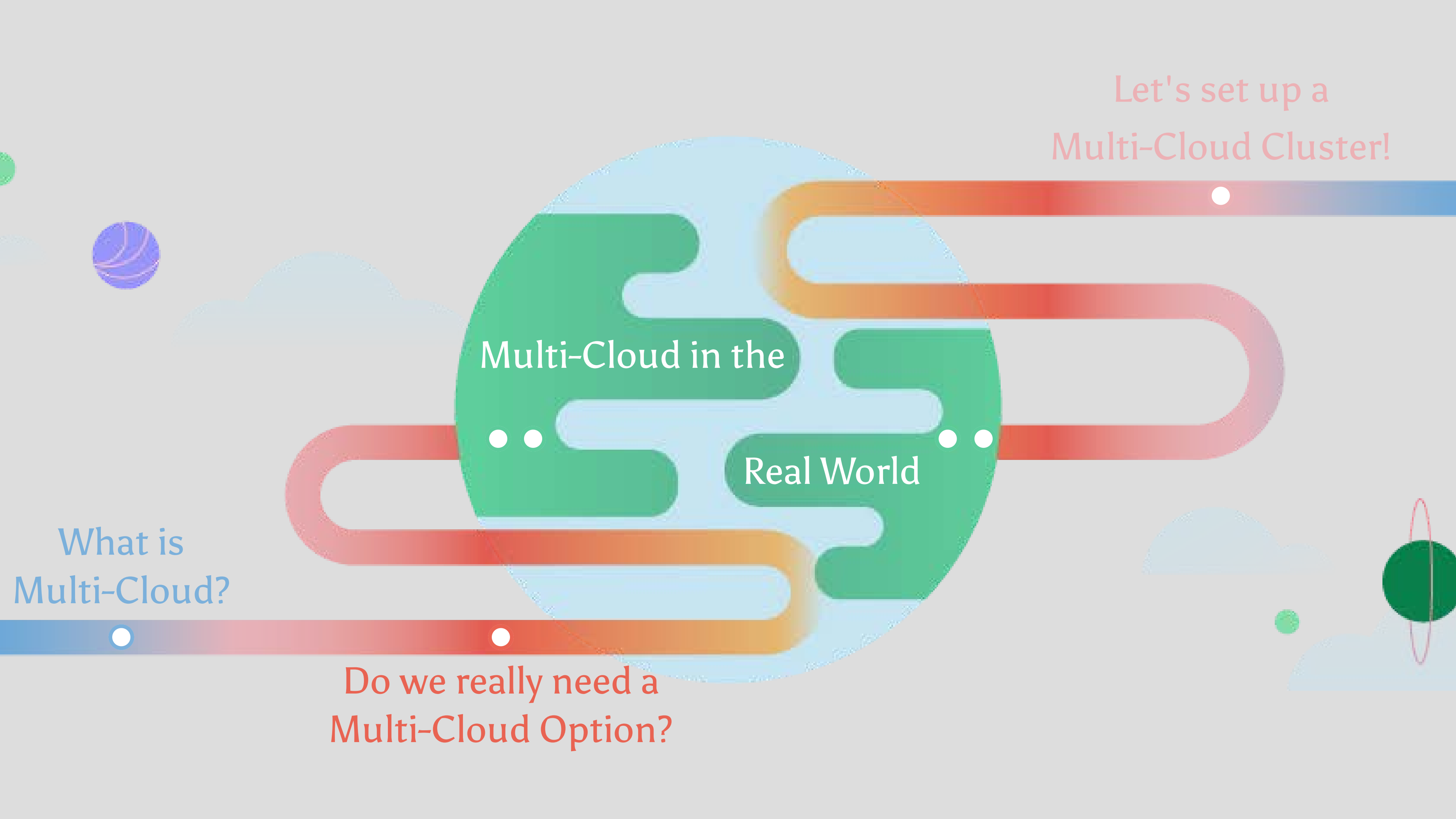
Let's set up a
Multi-Cloud Cluster!

Multi-Cloud in the

Real World

What is
Multi-Cloud?

Do we really need a
Multi-Cloud Option?





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?



WIRED

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



Understanding Google Cloud's recent service hiccups

By Roberto Torres Published March 27, 2020

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

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WIRED

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CBR
Computer Business Review

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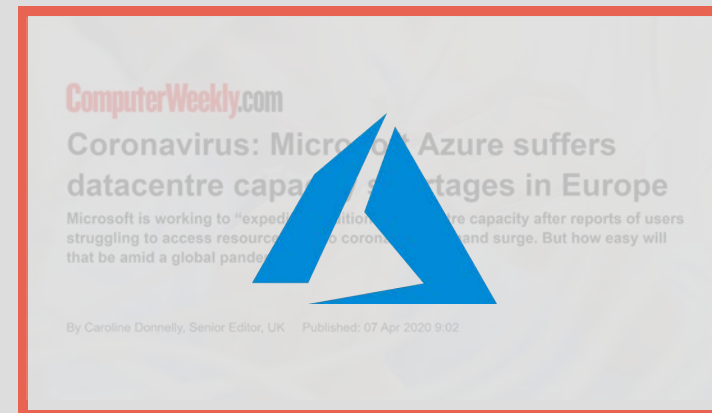
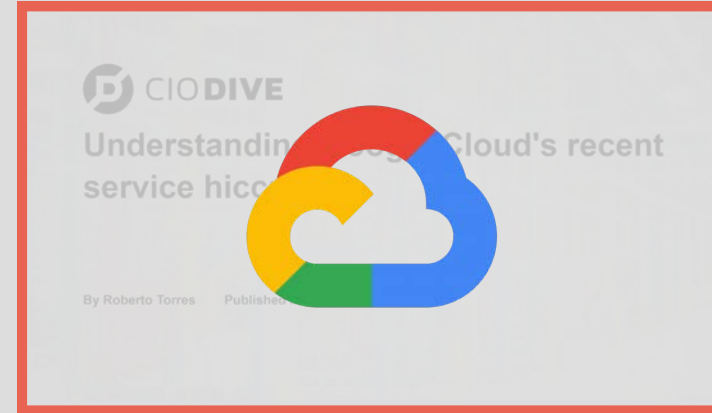
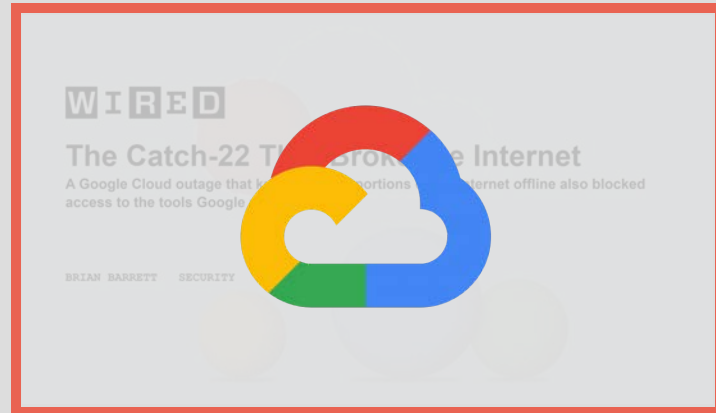
JUN 2019

OCT 2019

MAR 2020

JUN 2020

NOV 2020



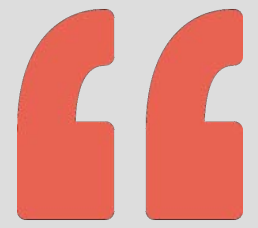
No cloud is spared from outages

CIO THINK TANK
FROM JOBS

CIO Think Tank Roadmap Report:

Setting the Multi-cloud Agenda

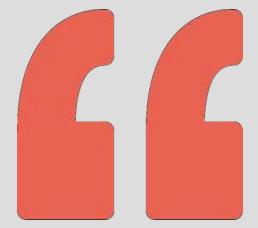
 IDG in partnership with  Dell Technologies



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

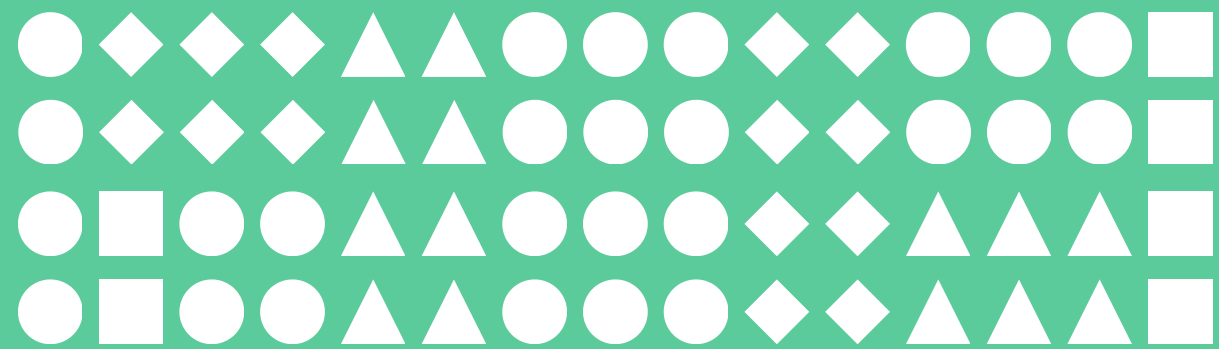
<https://www.canada.ca/en/government/system/digital-government/digital-government-innovations/cloud-services/direction-electronic-data-residency.html>



Canada: Direction for Electronic Data Residency

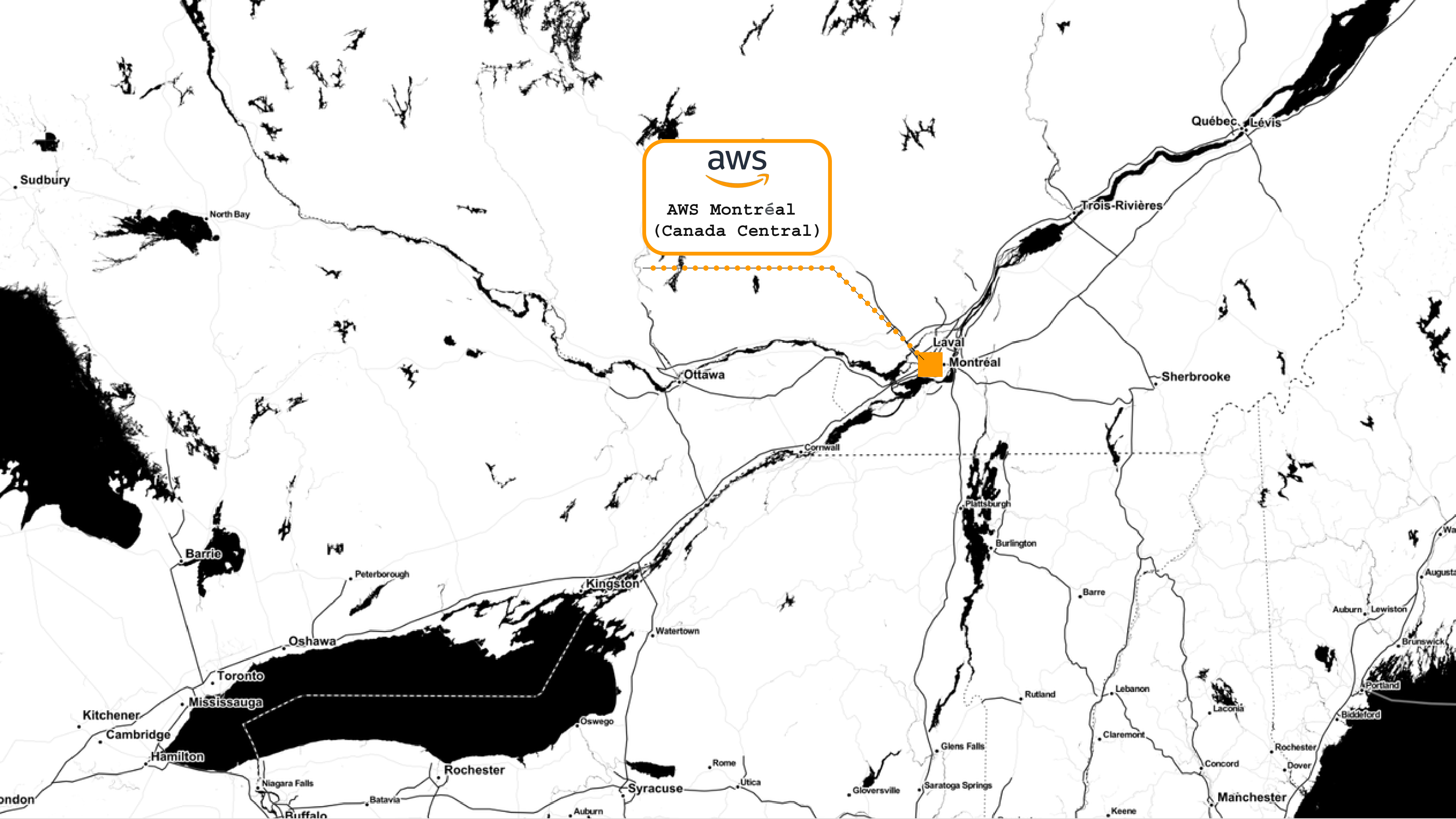


British Columbia & Nova Scotia

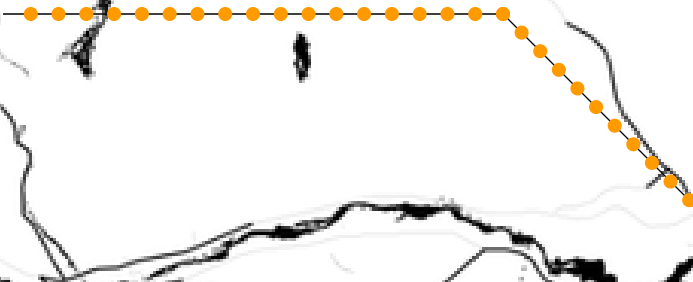


Ontario





aws
AWS Montréal
(Canada Central)



Montréal

Ottawa

Québec, Lévis

Trois-Rivières

Sherbrooke

Sudbury

North Bay

Barrie

Peterborough

Kingston

Cornwall

Pittsburgh

Burlington

Barre

Oshawa

Watertown

Toronto

Mississauga

Kitchener

Cambridge

Hamilton

Oswego

Rochester

Rome

Utica

Glens Falls

Saratoga Springs

Gloversville

Rutland

Lebanon

Claremont

Laconia

Manchester

Concord

Dover

Auburn

Lewiston

Brunswick

Portland

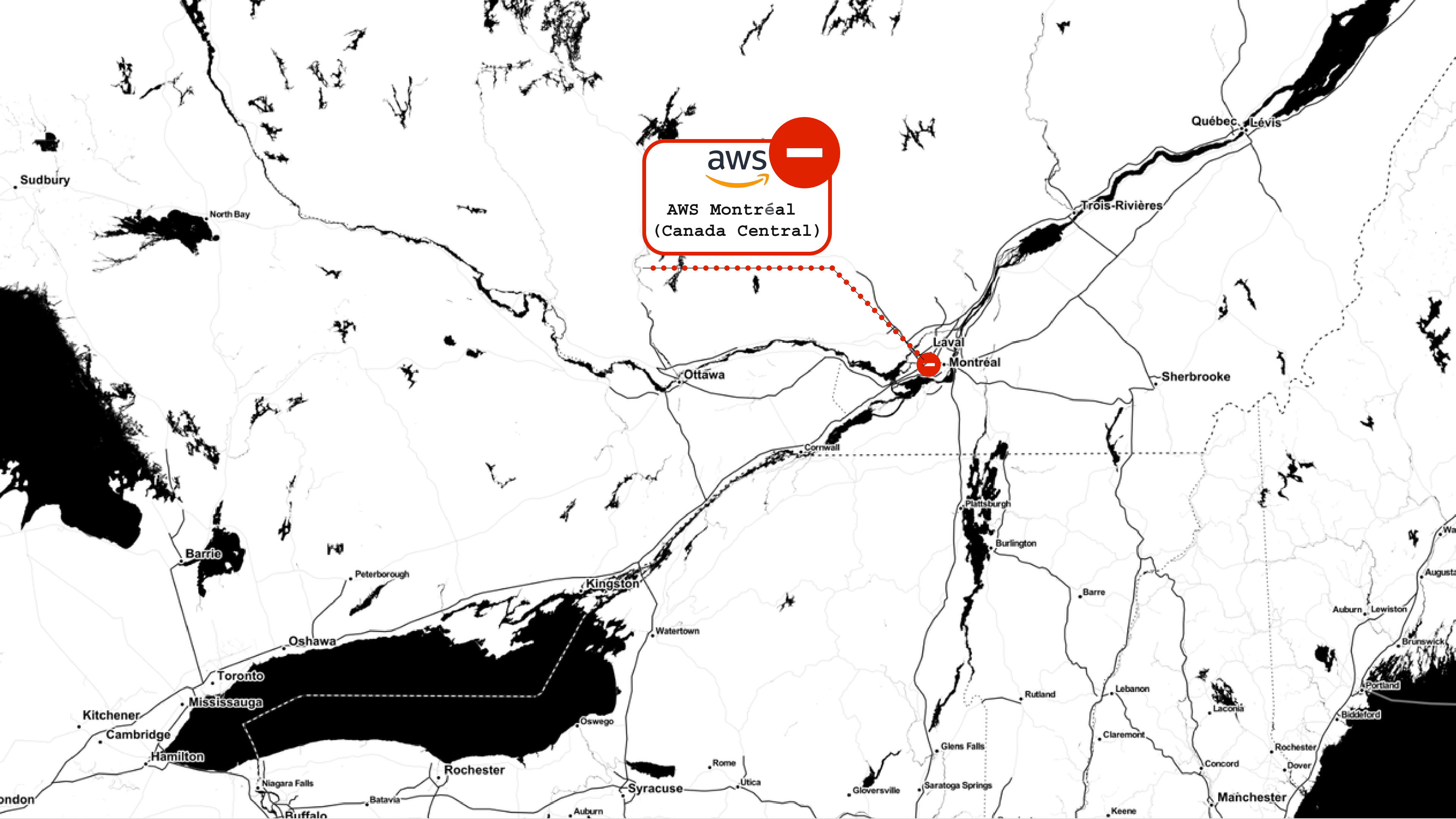
Biddeford

London

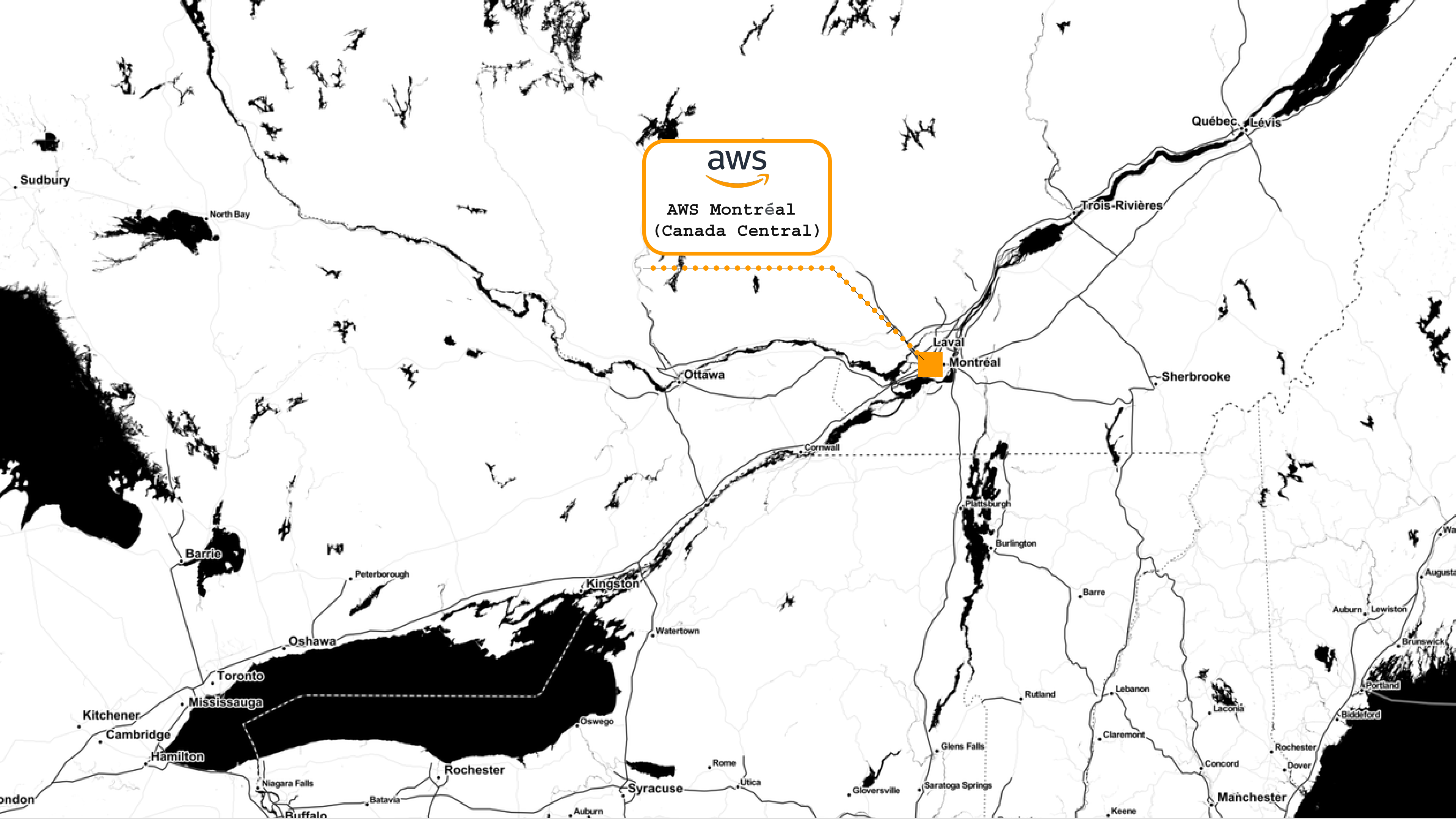
Ruffalo

Batavia

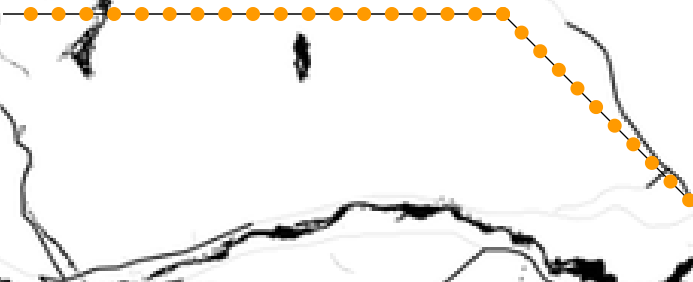
Auburn



aws 
AWS Montréal
(Canada Central)



aws
AWS Montréal
(Canada Central)



Montréal

Ottawa

Québec, Lévis

Trois-Rivières

Sherbrooke

Sudbury

North Bay

Barrie

Peterborough

Kingston

Cornwall

Pittsburgh

Burlington

Barre

Oshawa

Watertown

Toronto

Mississauga

Kitchener

Cambridge

Hamilton

Oswego

Rochester

Syracuse

Rome

Utica

Gloversville

Saratoga Springs

Glens Falls

Rutland

Lebanon

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Laconia

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Rochester

Dover

Auburn

Lewiston

Brunswick

Portland

Biddeford

Manchester

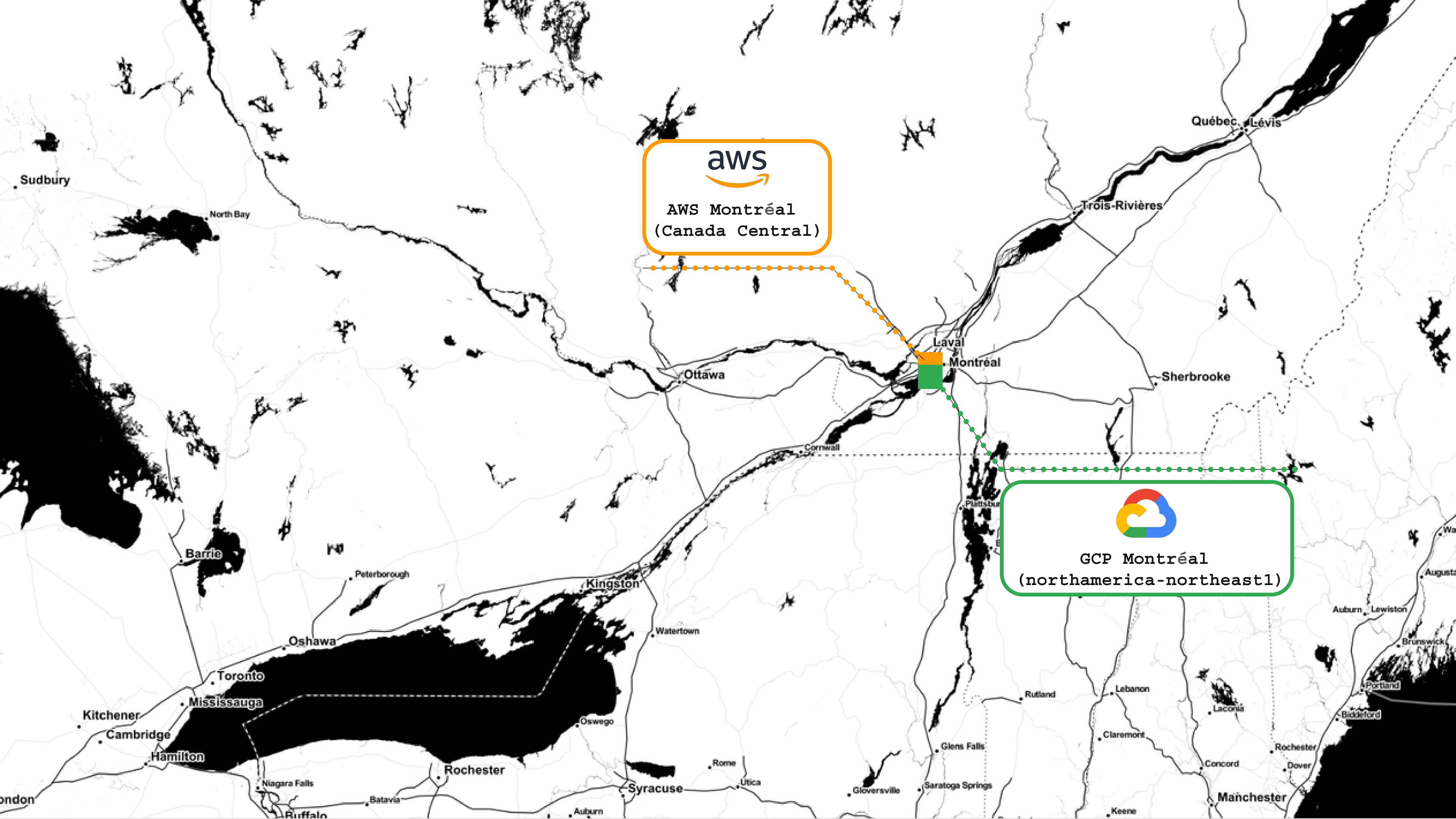
London

Ruffalo

Batavia

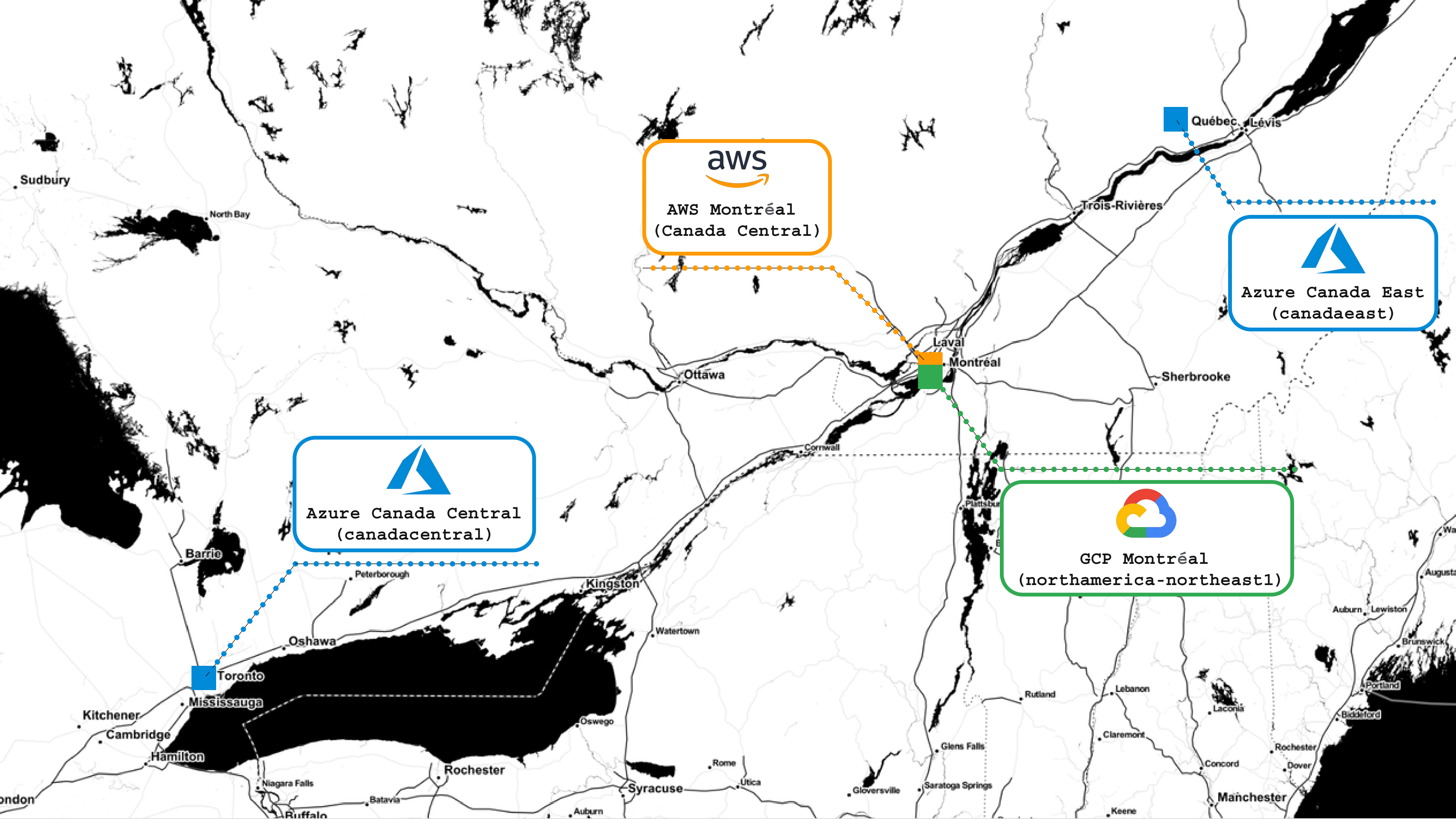
Auburn

Keene




AWS Montréal
(Canada Central)


GCP Montréal
(northamerica-northeast1)

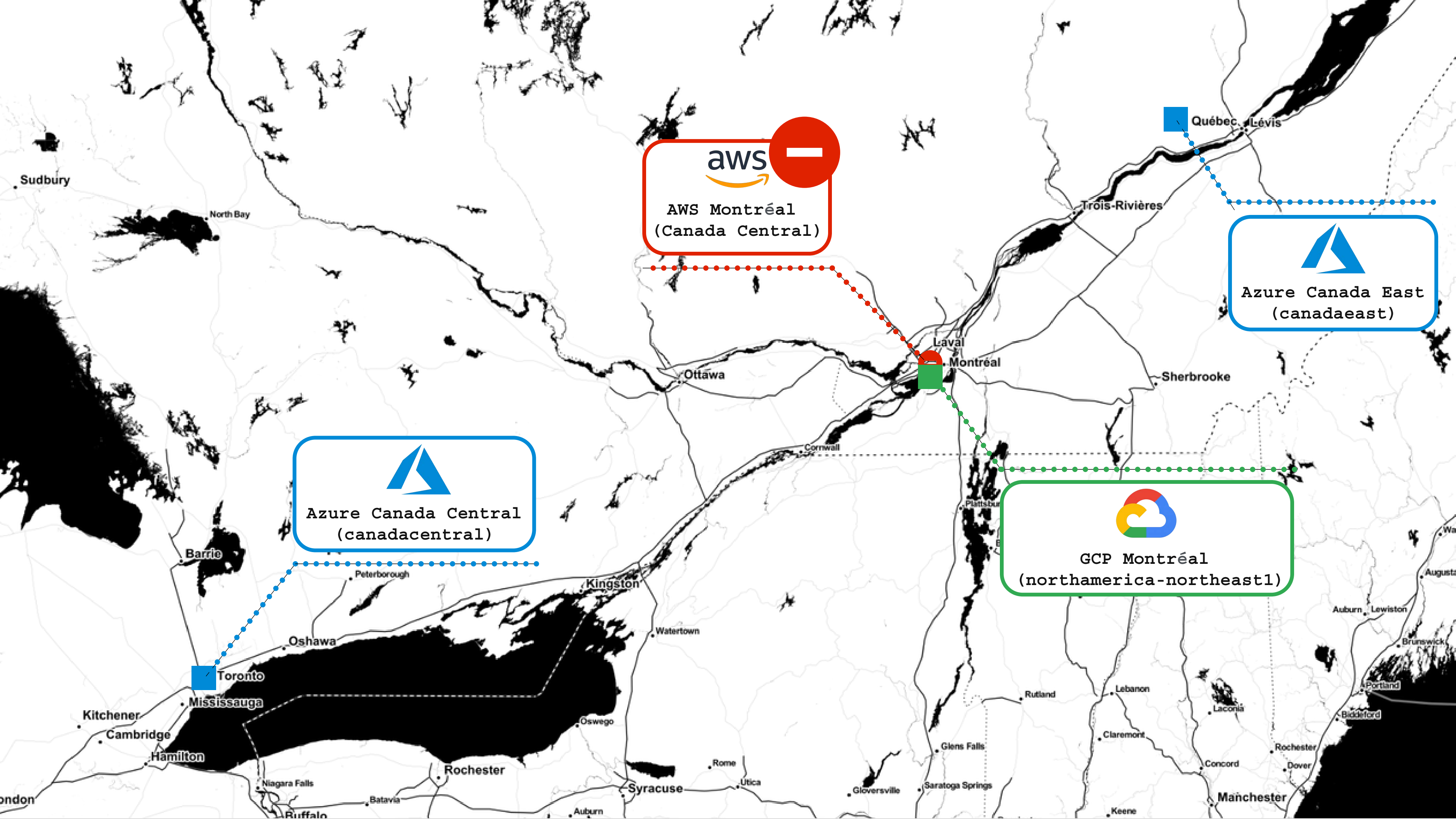



AWS Montréal
(Canada Central)


Azure Canada East
(canadaeast)


Azure Canada Central
(canadacentral)


GCP Montréal
(northamerica-northeast1)

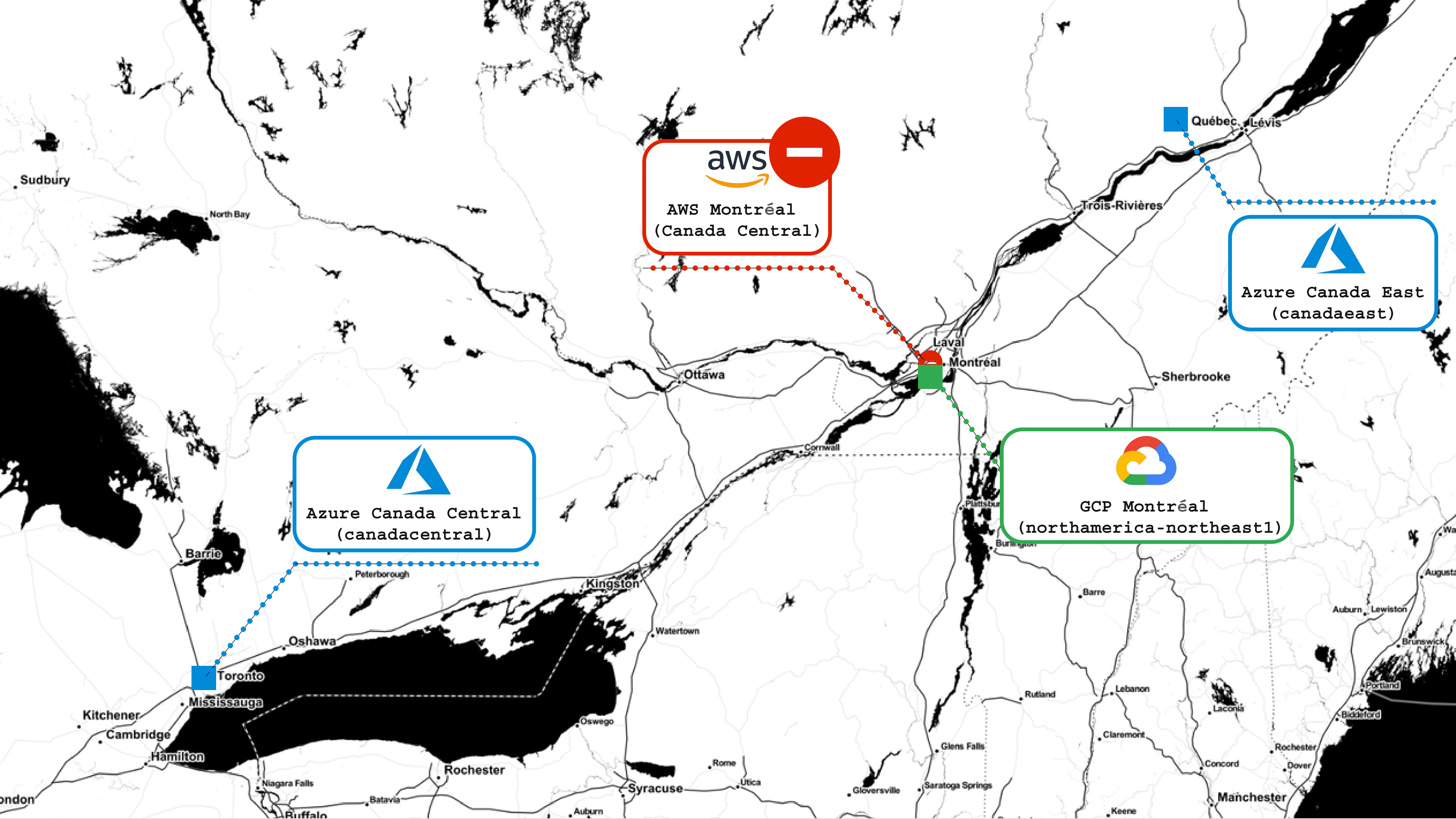


 
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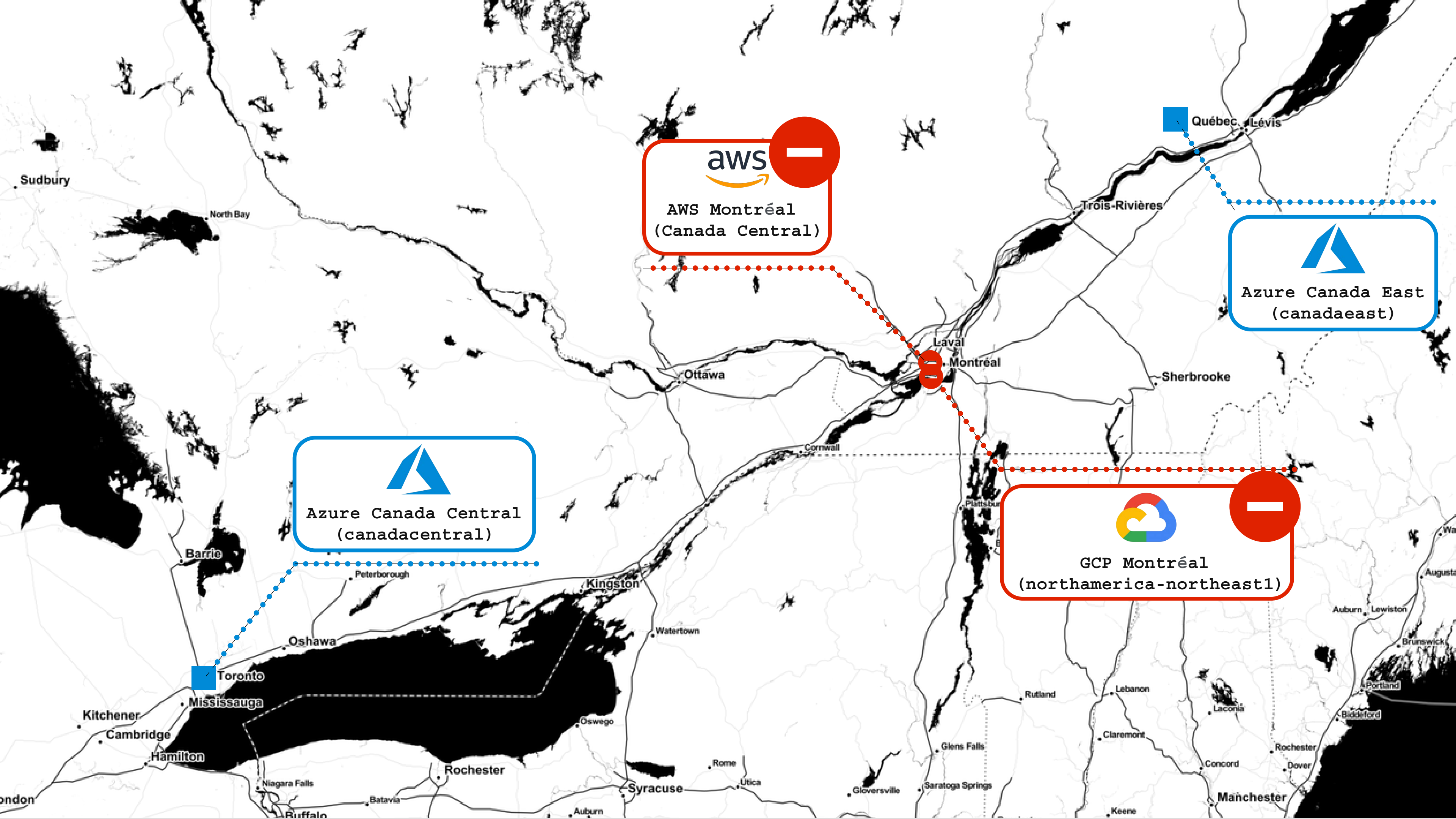


 
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(Canada Central)


Azure Canada East
(canadaeast)


Azure Canada Central
(canadacentral)


GCP Montréal
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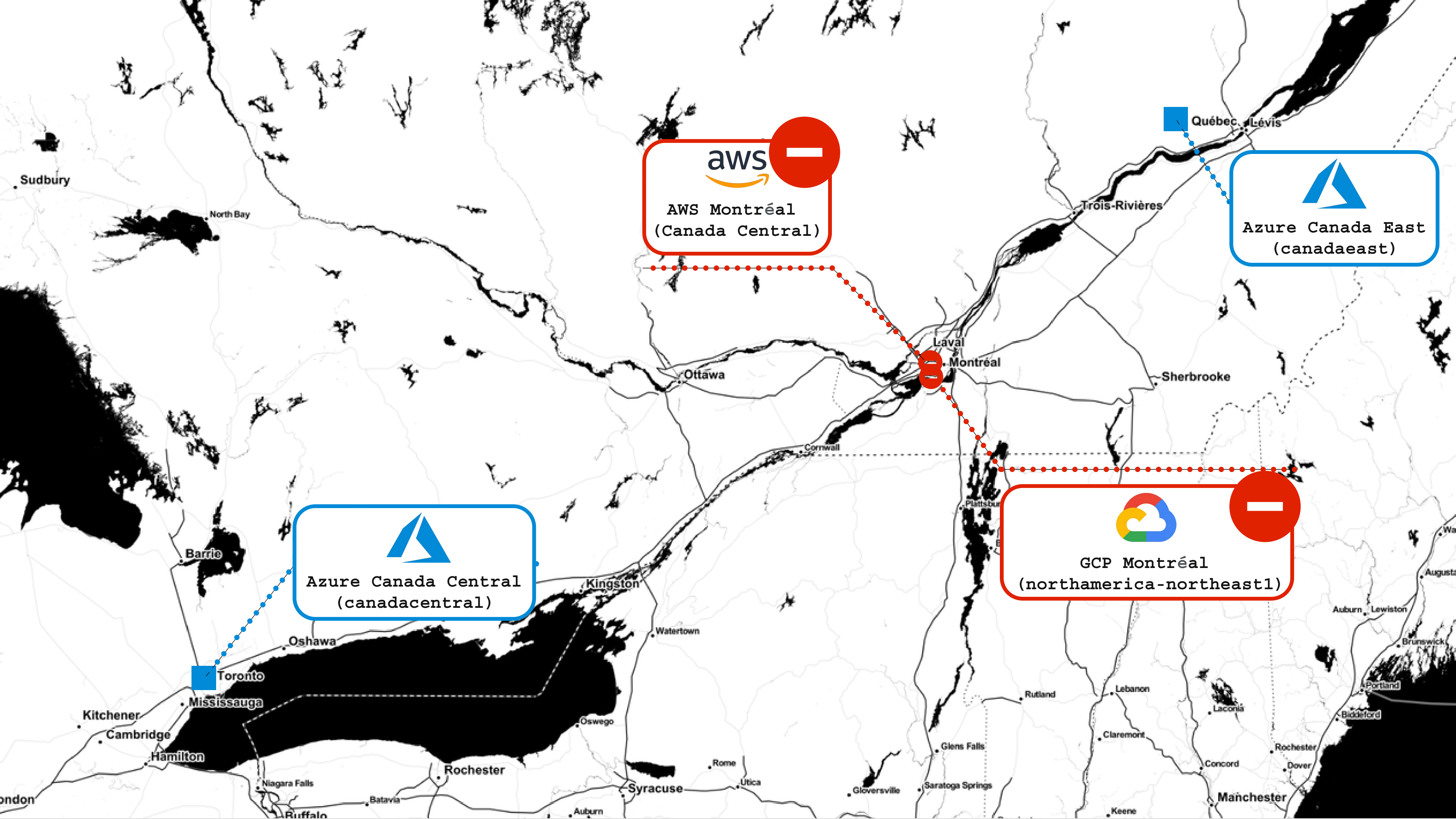


 
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Azure Canada East
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Azure Canada Central
(canadacentral)

 
GCP Montréal
(northamerica-northeast1)



 
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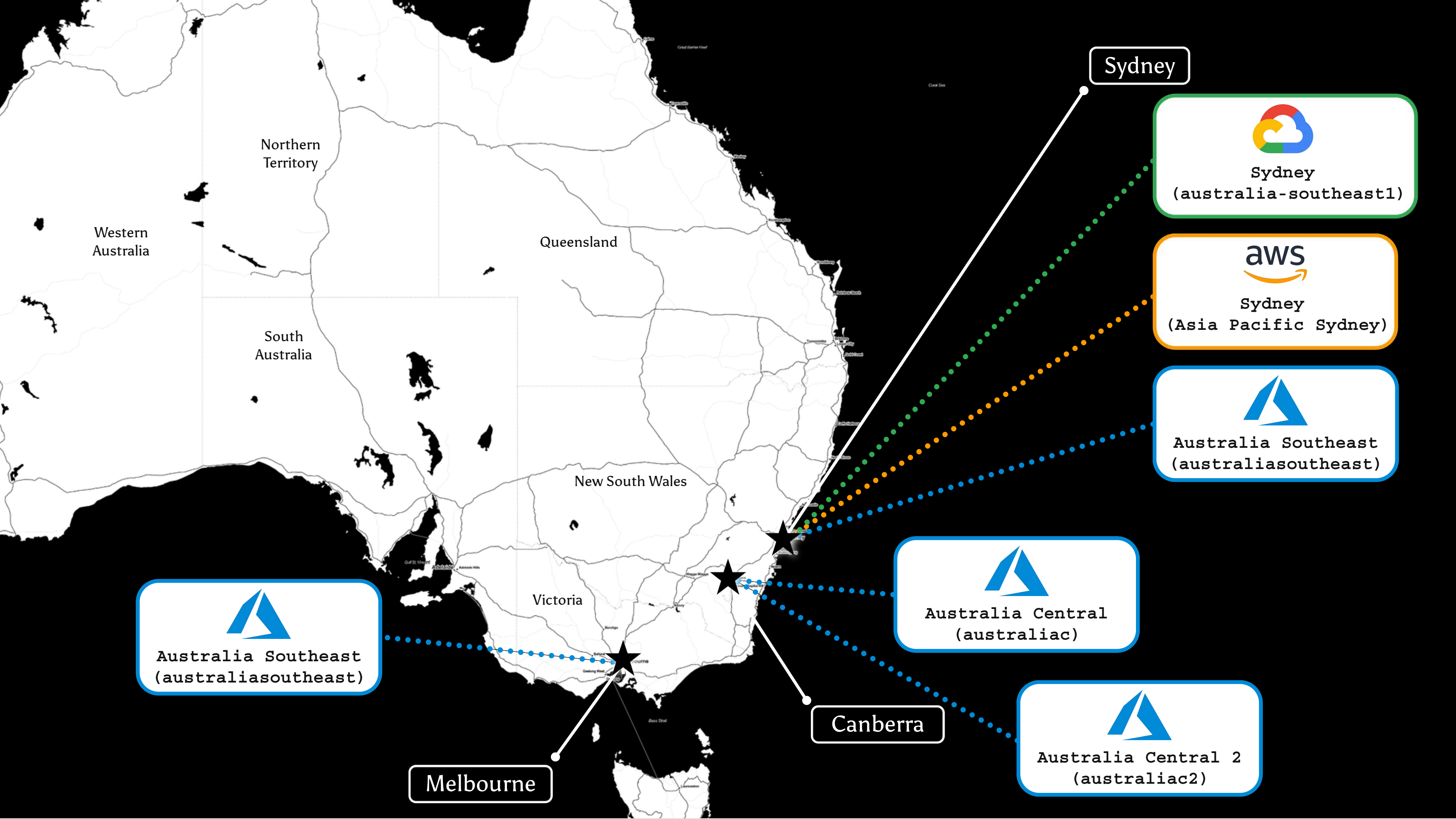
Canada: Direction for Electronic Data Residency

<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

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



Sydney



Sydney
(australia-southeast1)



Sydney
(Asia Pacific Sydney)



Australia Southeast
(australiasoutheast)



Australia Central
(australiac)



Australia Central 2
(australiac2)



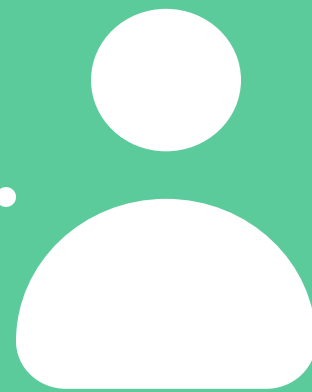
Australia Southeast
(australiasoutheast)

Canberra

Melbourne

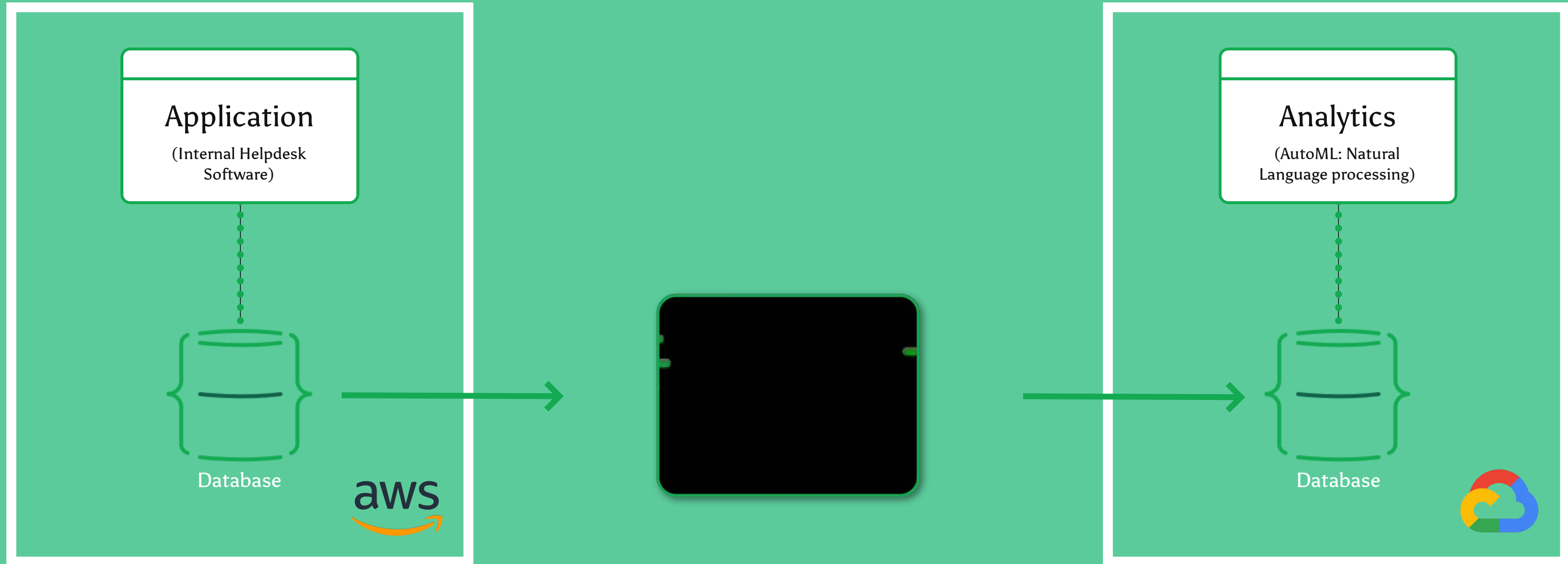
Best of All Clouds

Recommendation Feature



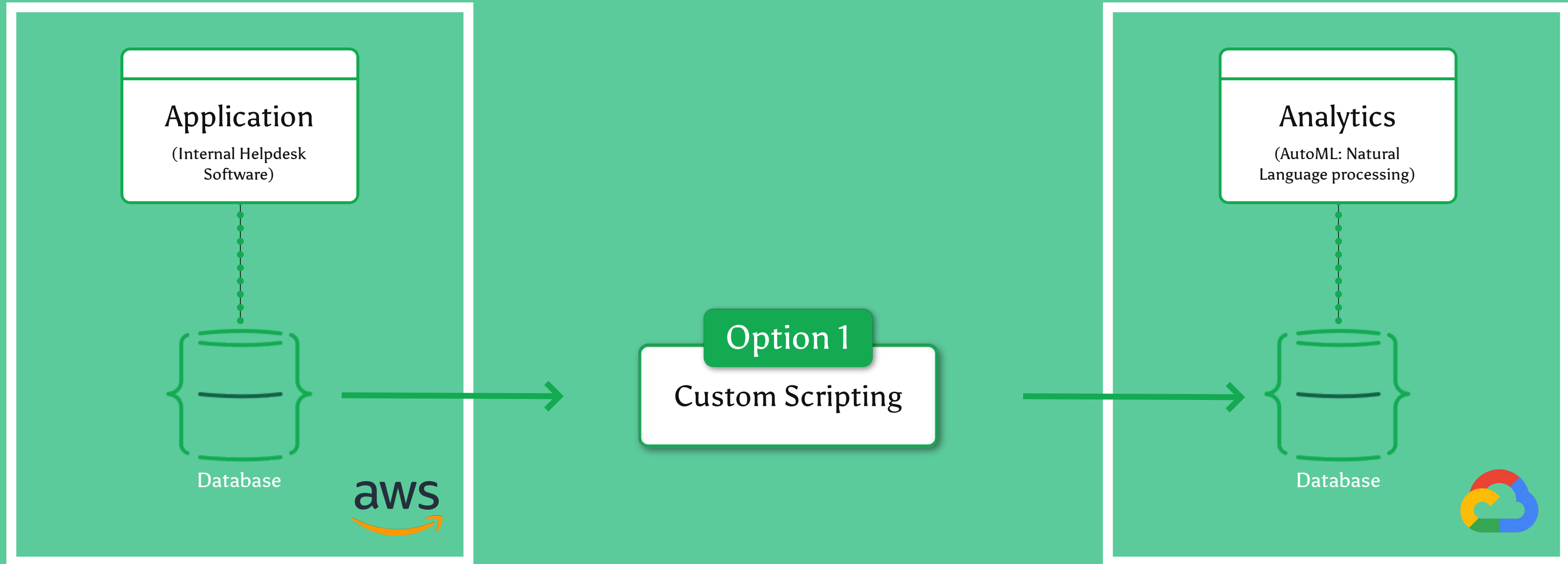
Best of All Clouds

Recommendation Feature



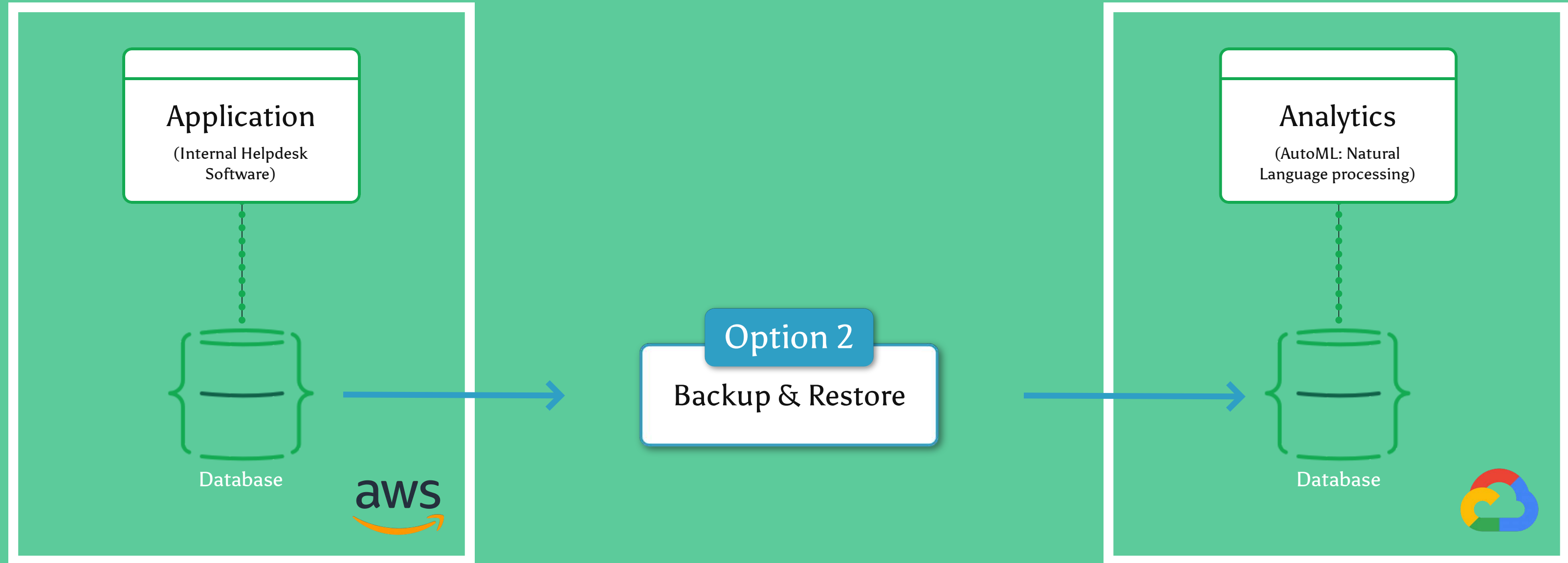
Best of All Clouds

Recommendation Feature



Best of All Clouds

Recommendation Feature



Best of All Clouds

Recommendation Feature

Option 3

Multi-Cloud Cluster

Application

(Internal Helpdesk Software)

Analytics

(AutoML: Natural Language processing)

Electable Node



Electable Node



Electable Node

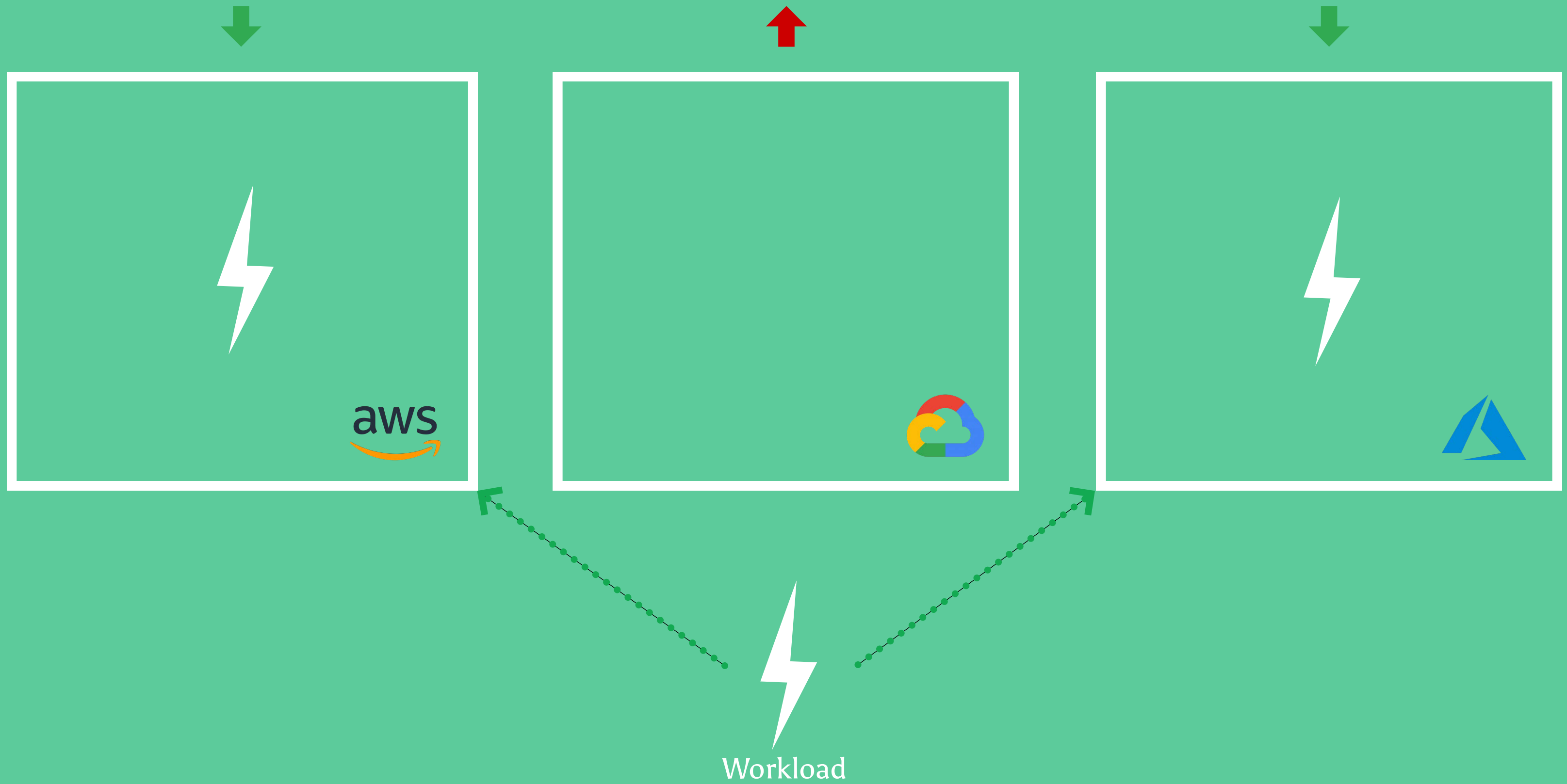


Read-Only Analytics Node



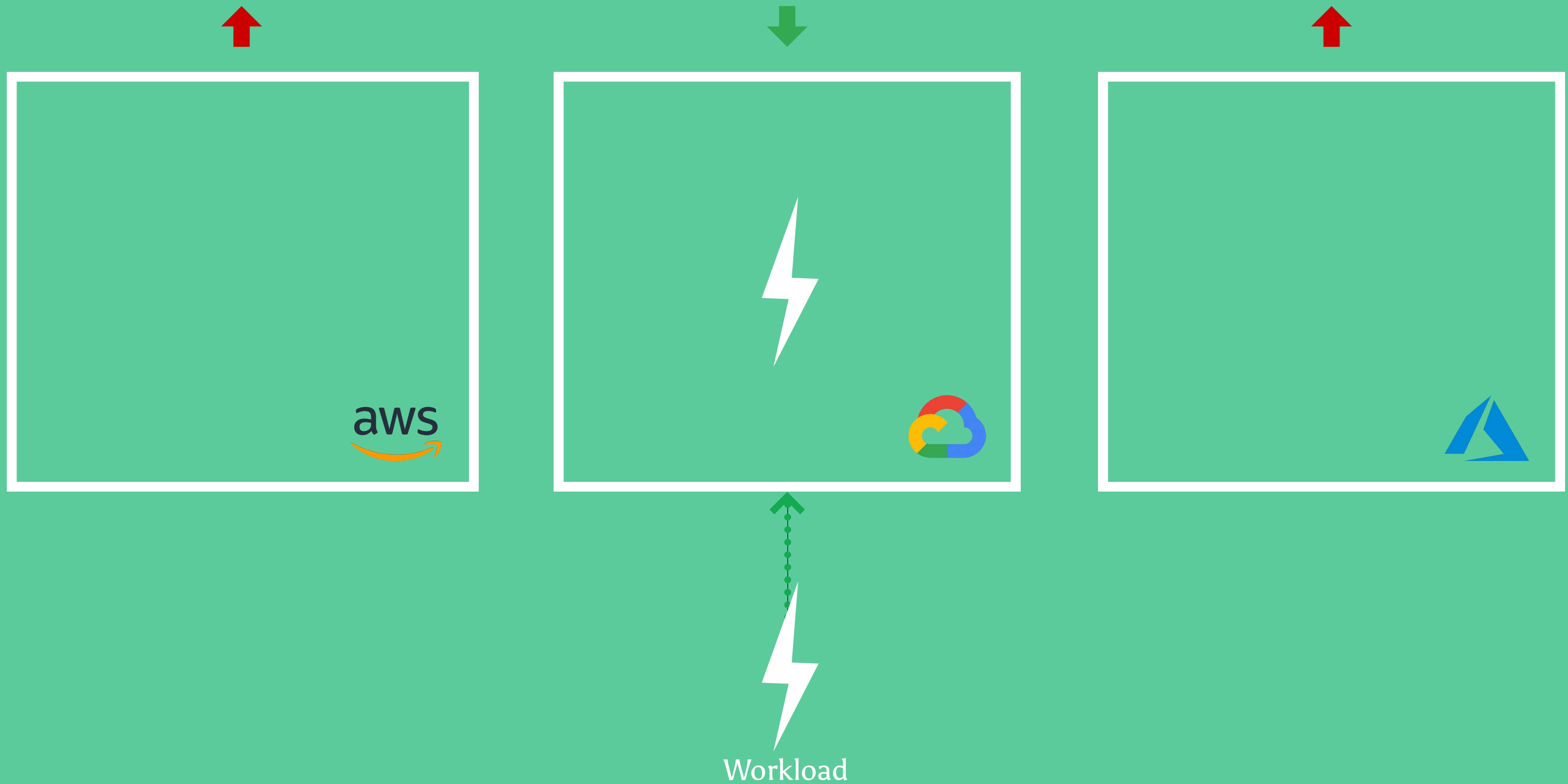
Best of All Clouds

Cloud Arbitrage / Cost Optimization



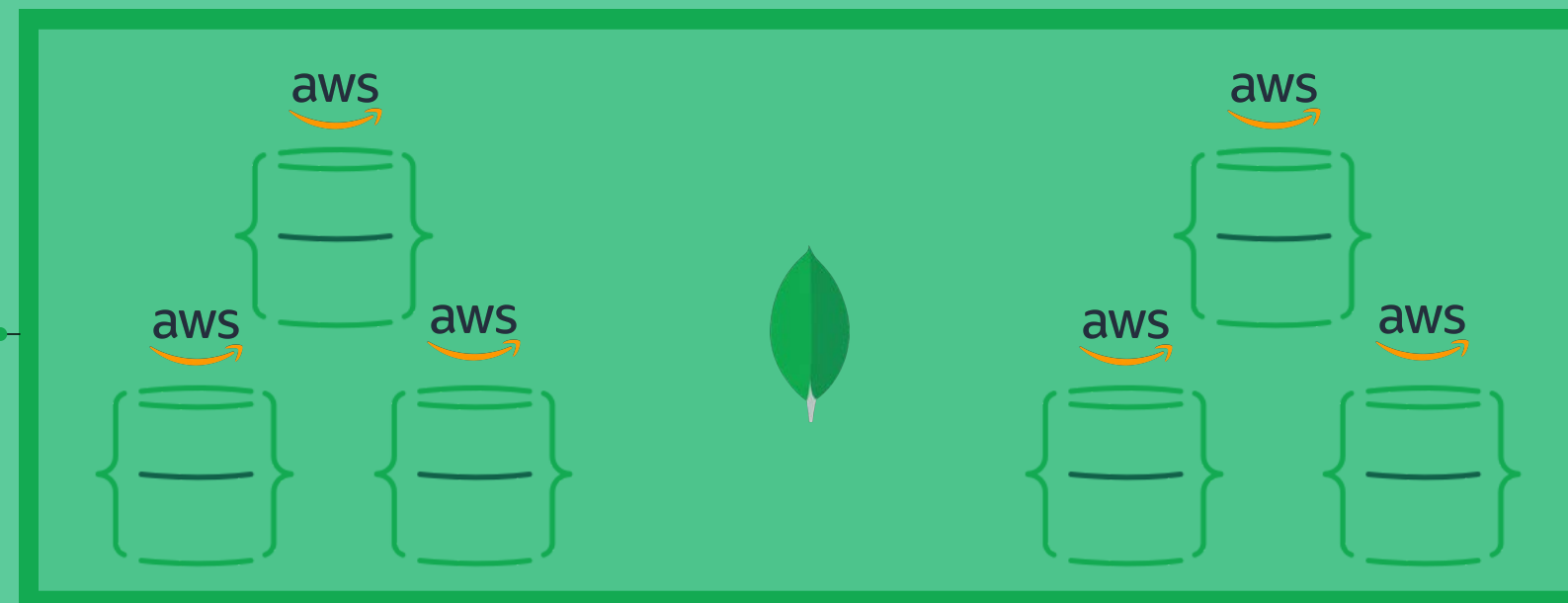
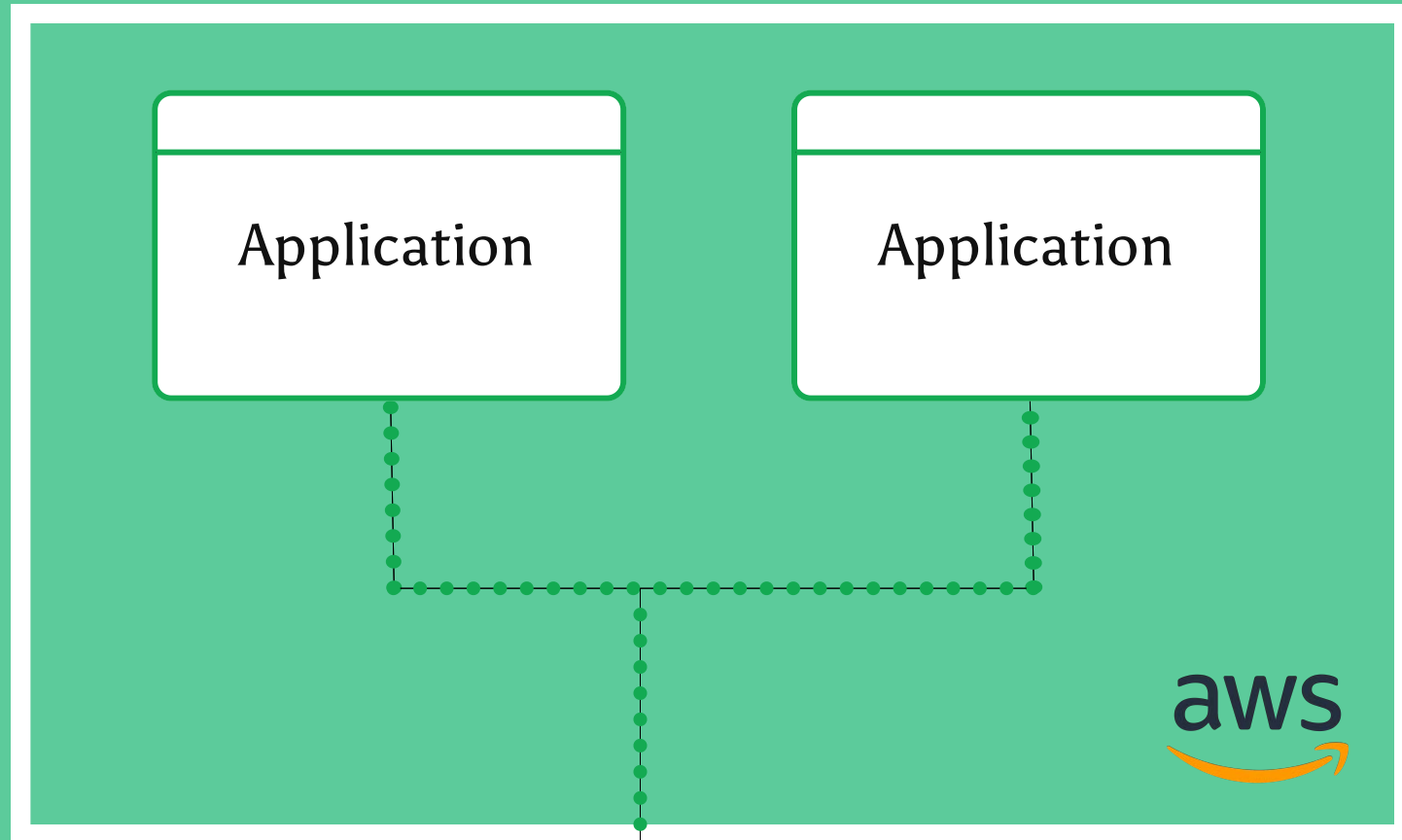
Best of All Clouds

Cloud Arbitrage / Cost Optimization



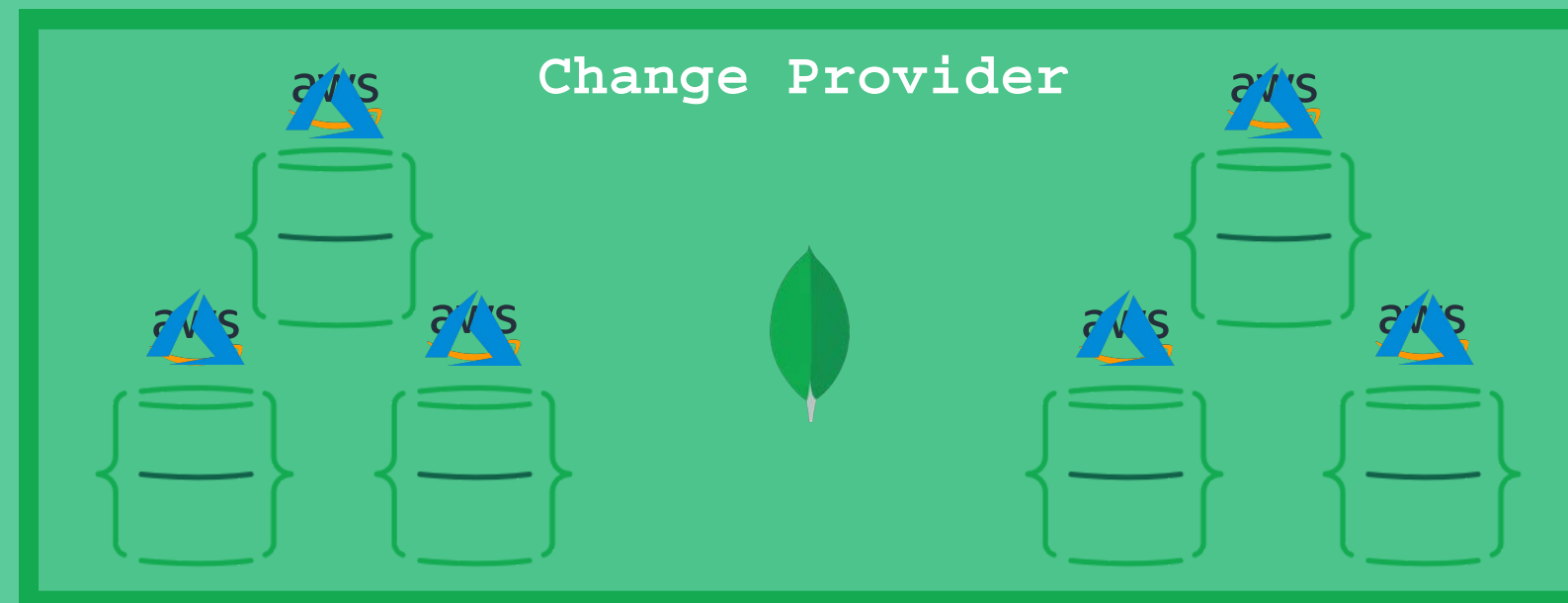
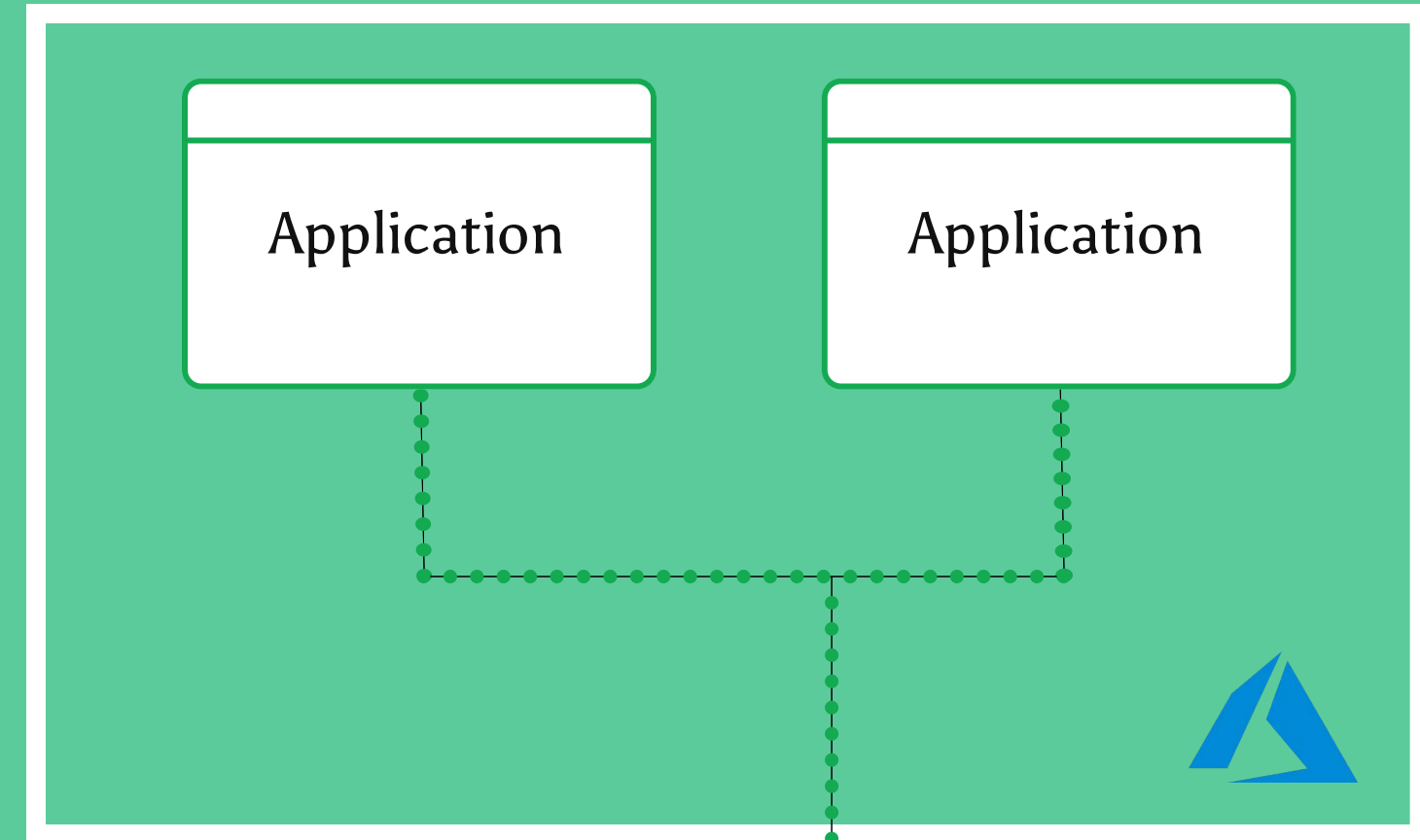
Best of All Clouds

Cloud Arbitrage / Cost Optimization



Best of All Clouds

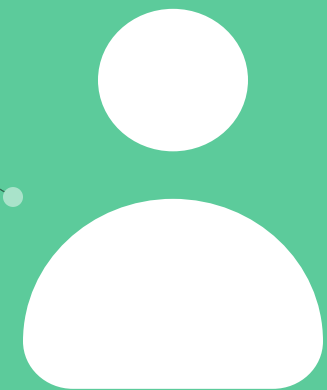
Cloud Arbitrage / Cost Optimization



Best of All Clouds



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

25+ Geographic Regions



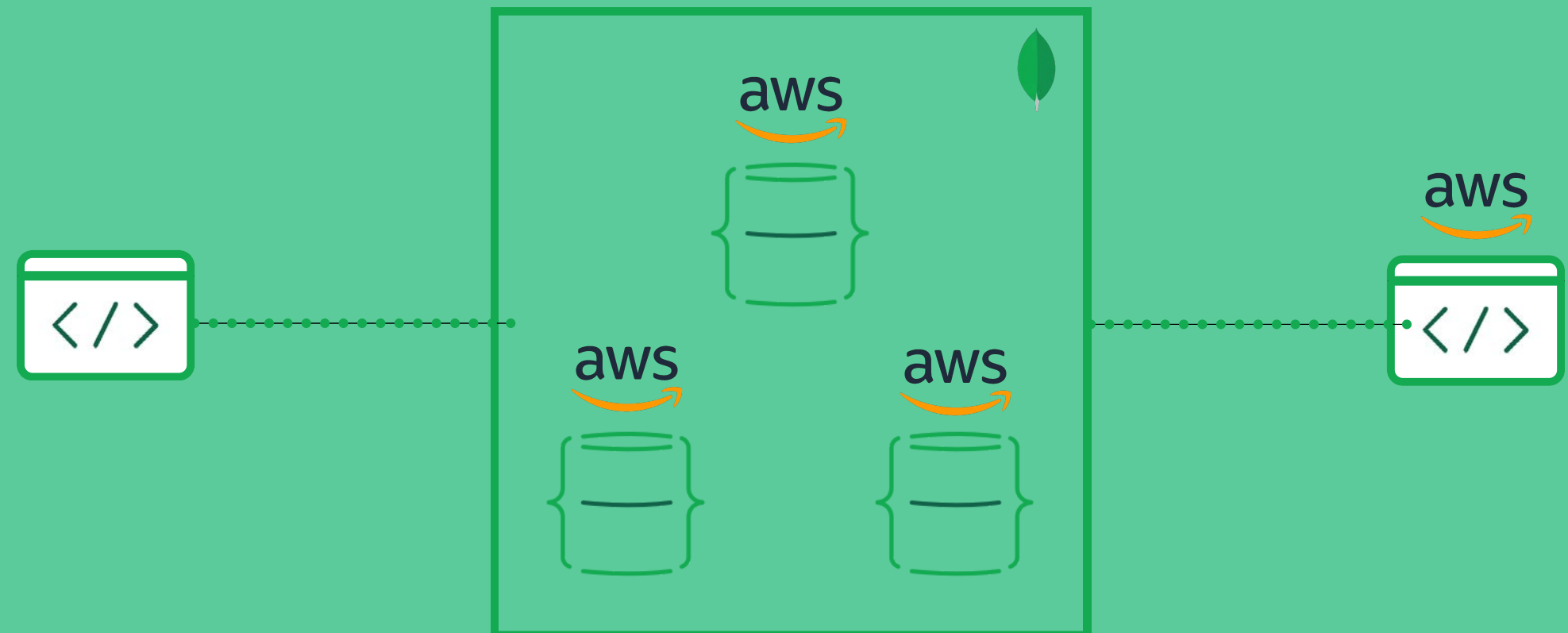
Auto ML
Vision AI
AI Platform

24+ Geographic Regions



Azure DevOps
Azure VMs
Azure Active Directory

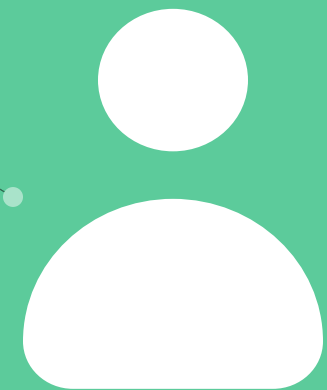
60+ Geographic Regions



Best of All Clouds



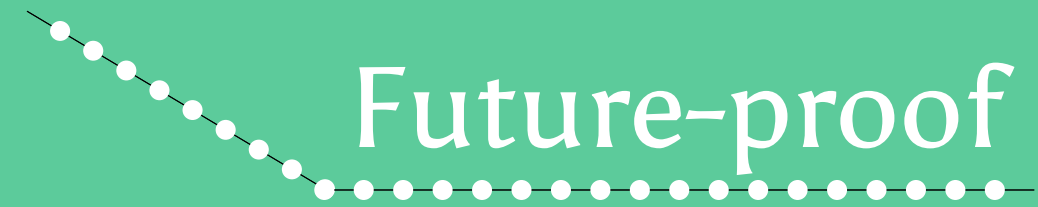
Recommendation Feature, Cloud Arbitrage / Cost Optimization



Developers' Choice



All industries

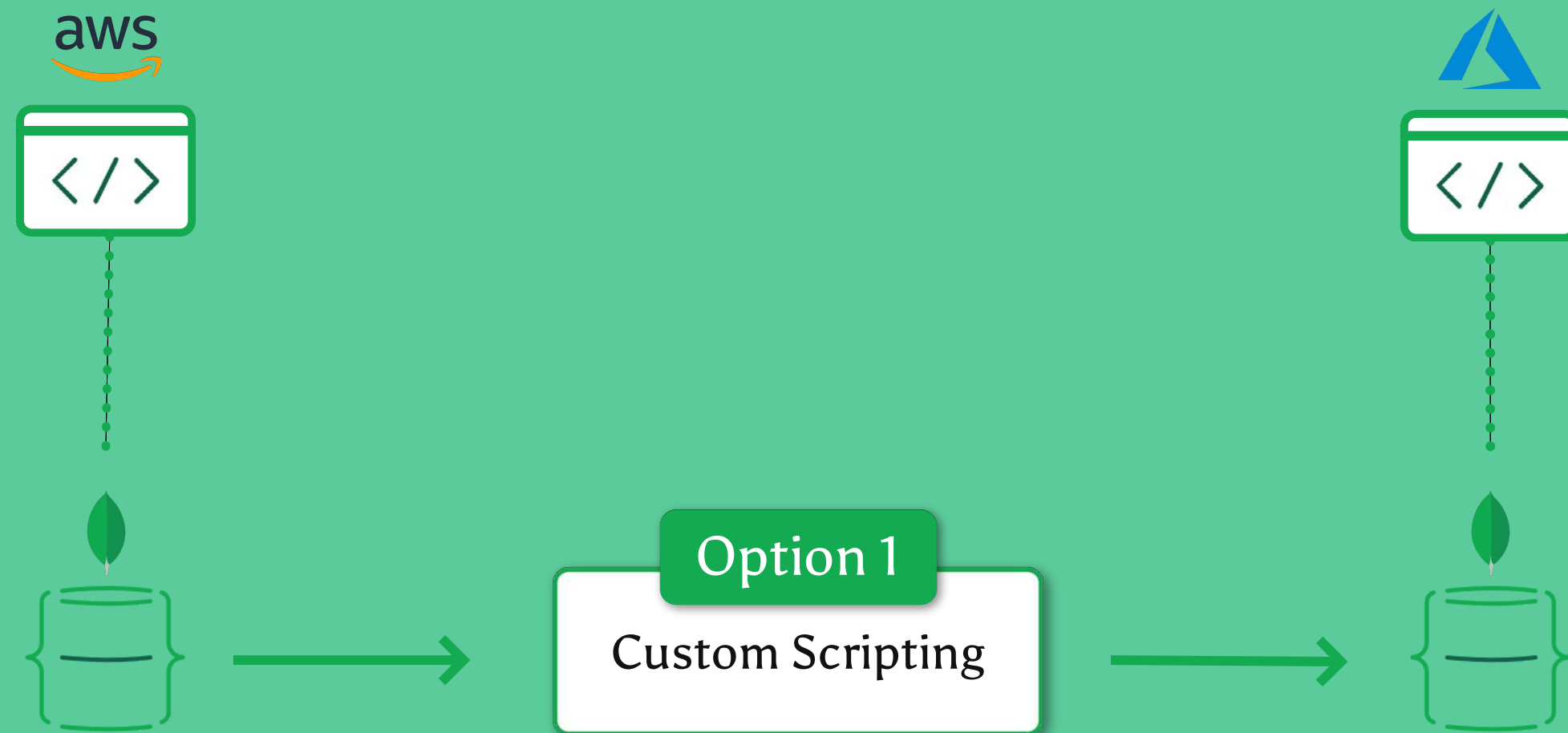


Future-proof

Mergers & Acquisitions

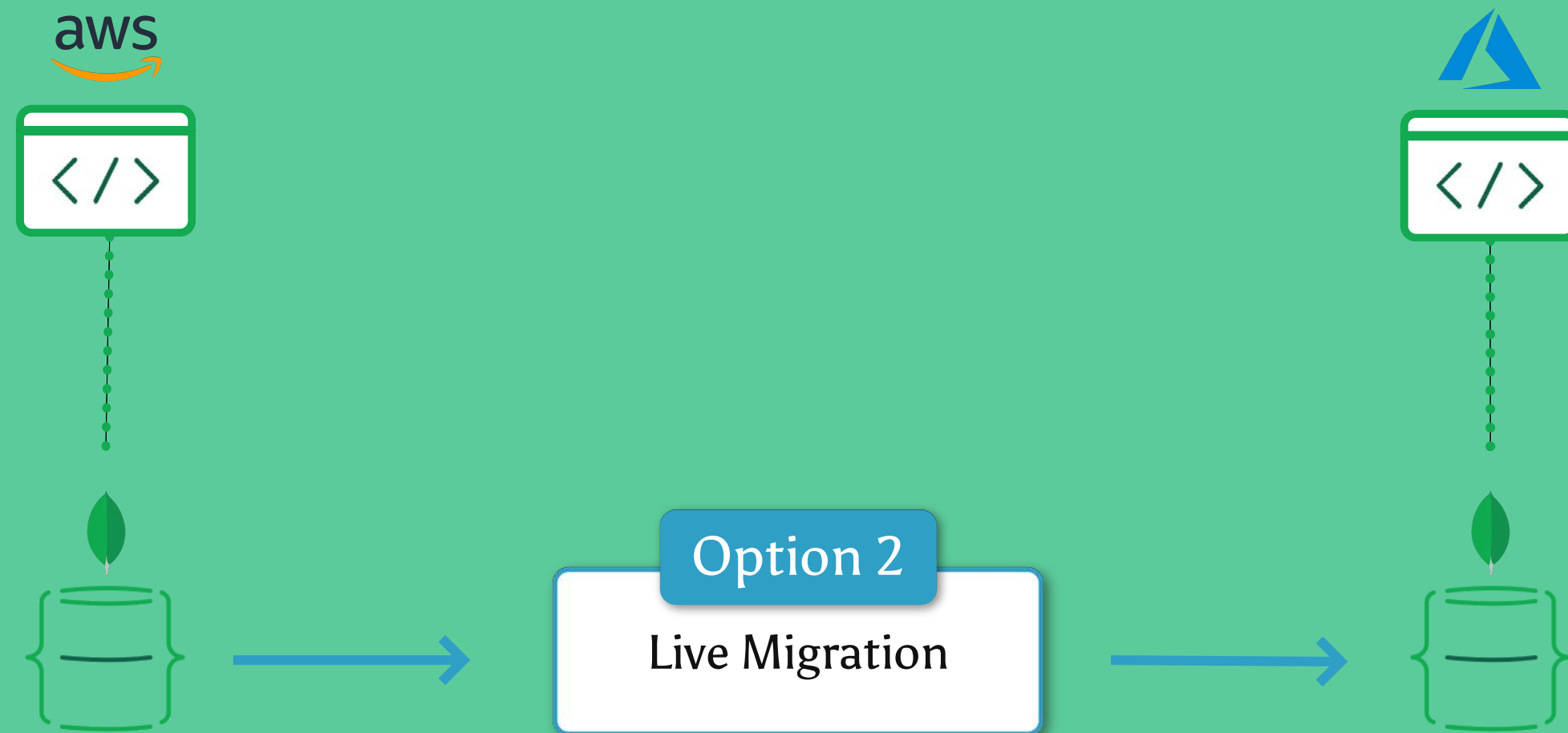
Future-proof

Mergers & Acquisitions



Future-proof

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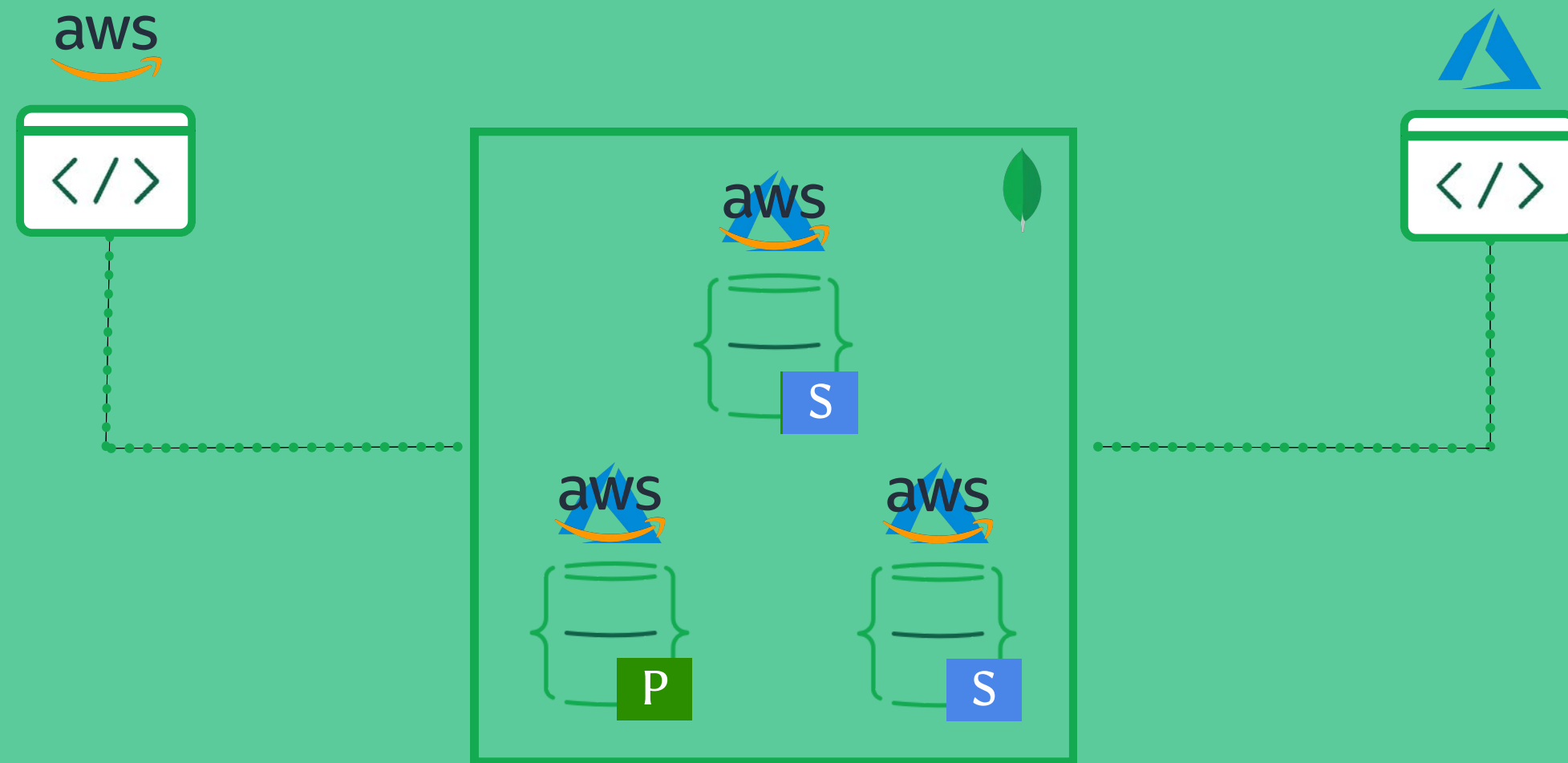


Future-proof

Mergers & Acquisitions

Option 3

Multi-Cloud Cluster



Best of All Clouds

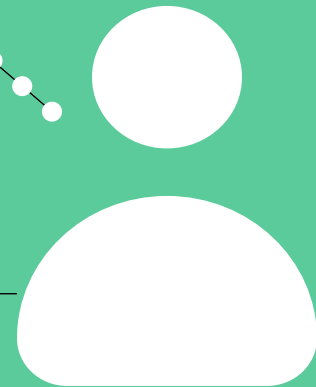
Recommendation Feature, Cloud Arbitrage / Cost Optimization

Developers' Choice

All industries

Future-proof

Mergers & Acquisitions



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Australia: My Health Records Act 2012

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

Multi-Cloud in the Real World



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!**

 @adriennetacke



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