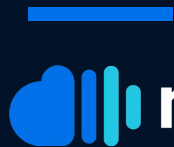


FinOps on nOps – Cost Optimization Without Spending A Dime



nOps™



Meet the **Speakers**



Satish Bora

GM



Richard Tribang

Solutions Architect EMEA



Matt Long

Engineering Manager
Edge, Security, and Cloud
Infrastructure



Topics & Agenda



1. FinOps and Cost Optimization

Richard Trabing, AWS - *15 min*



2. FinOps on nOps

Satish Bora, nOps - *15 min*



3. Customer Speak – nOps Experience

Matt Long, WGTWO - *15 min*





Cost Optimization & FinOps

Some AWS Best-Practices...

Richard Trabing - AWS Well-Architected Solutions Architect

Agenda

- FinOps Definitions & Motivations
- FinOps @ AWS
 - Well-Architected
 - Cloud Financial Management
 - Cloud Operations Model
- AWS Framework Details
- Synthesis/Summary

FinOps Definition & Motivators

What is “FinOps”?

Finops.org: “FinOps is an evolving cloud financial management **discipline** and cultural **practice** that enables organizations to get **maximum business value** by helping engineering, finance, technology and business teams to **collaborate** on data-driven **spending decisions**.”



Why is FinOps important?

- Traditional IT – CAPEX
- High-tech “as-a-service” – OPEX



Why is FinOps important?

- Traditional IT – CAPEX
- High-tech “as-a-service” – OPEX
- Incumbents vs Startups
- Innovation wins



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- Incumbents are learning...



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- Opex Challenges...
 - Finance



Why is FinOps important?

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- Incumbents are learning...
- Opex Challenges...
 - Finance, IT



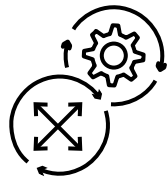
Why is FinOps important?

- Traditional IT – CAPEX
- High-tech “as-a-service” – OPEX
- Incumbents vs Startups
- Innovation wins
- Incumbents are learning...
- Opex Challenges...
 - Finance, IT, Intrusion...



FinOps @ AWS

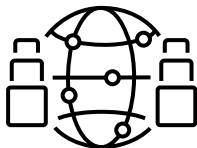
AWS Well-Architected Framework



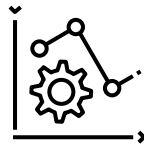
Operational
Excellence



Security



Reliability



Performance
Efficiency



**Cost
Optimization**



Sustainability

AWS Cloud Financial Management (CFM)

Manage, optimize, and plan AWS cost and usage

See



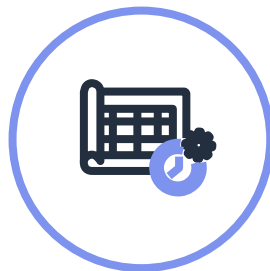
Measurement and
accountability

Save



Cost optimization

Plan



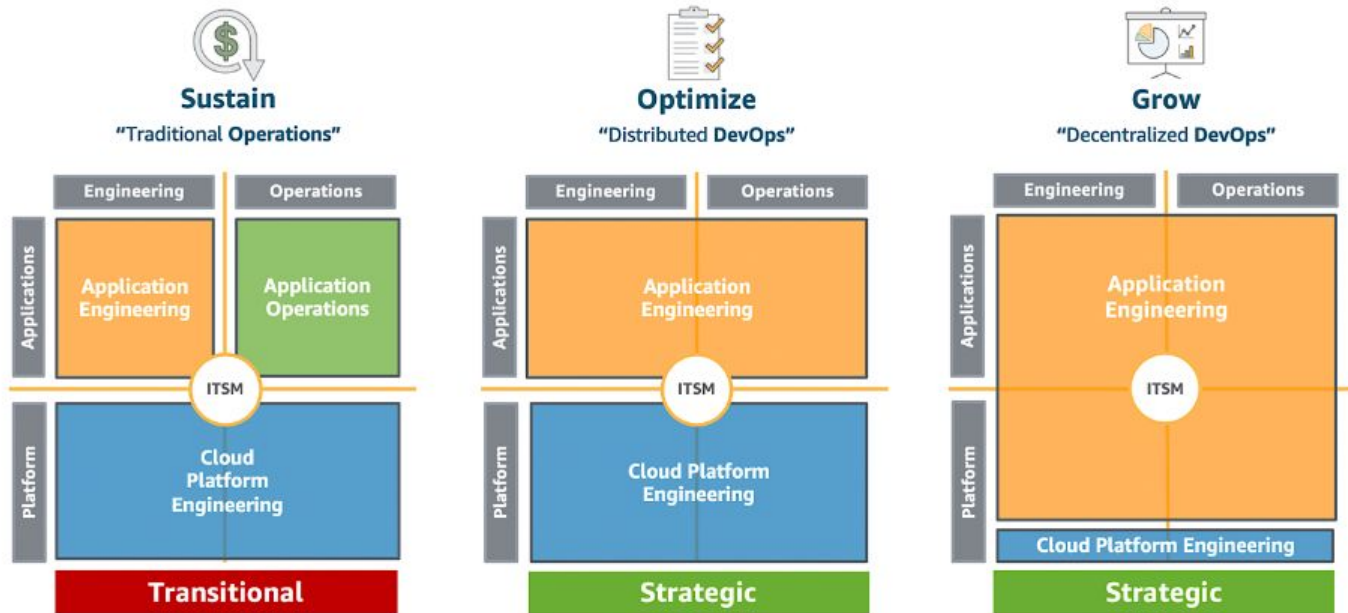
Planning and
forecasting

Run



Cloud financial
operations

Cloud Operating Model



FinOps @ AWS – The Details...

WA - Cost Optimization Principles

- Implement Cloud Financial Management (CFM)
- Adopt a consumption model
- Measure overall efficiency
- Stop spending money on undifferentiated heavy-lifting
- Analyze and attribute expenditure

WA – Cost Optimization Best Practices

- Practice Cloud Financial Management (CFM)
- Expenditure and usage awareness
- Cost-effective resources
- Manage demand and supply resources
- Optimizing over time

WA – Cost Optimization Questions - How do you...

- implement cloud financial management?
- govern & monitor usage and cost?
- evaluate cost when you select and configure services?
- use pricing models to reduce cost?
- plan for data transfer charges?
- manage demand, and supply resources?
- evaluate new services?
- decommission resources?

AWS Cloud Financial Management

Manage, optimize, and plan AWS cost and usage



Measurement and accountability (See)

Implement account and tagging strategy

Report and monitor cost and usage

Allocate costs

Measure efficiency/value KPIs



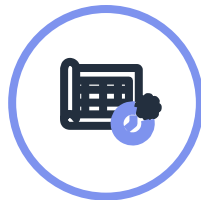
Cost optimization (Save)

Architect and design

Eliminate cloud waste

Choose the best purchase option

Evolve with new cloud offerings



Planning and forecasting (Plan)

Dynamic budgeting and forecasting

Estimate workload costs

Quantify cloud business value

Integrate cloud with IT financial management



Cloud financial operations (Run)

Executive sponsorship for a CFM function

Align stakeholder understanding of cost

Implement cloud guardrails

Evolve process, automation, and tools

<https://aws.amazon.com/aws-cost-management/cfm-community/>



nOps saves NiuPay 20% In AWS Costs in the First 30 Days, Achieves AWS APN Partner Status

Challenge

NiuPay maintains a variety of cloud-native, mission-critical systems for Public Sector customers. To achieve the high levels of security and compliance required to deliver such workloads, automation and auditability are valued above subjective decision making (i.e., manual processes by exception).

Solution

nOps has allowed NiuPay to further automate its rapid-cycle DevSecOps pipeline by providing team members with the tools to easily validate and iterate against multiple industry security standards, best practices, and cost control measures.

Benefits

- 20% cost reduction within the first month
- 90%+ time reduction associated with the generation of stakeholder reports
- 0 unused AWS resources
- 0 performance issues

“

nOps has brought together thousands of critical metrics in what can only be described as meticulously crafted information architecture. You're only ever a few clicks away from finding the information you need.

”

— Jason Kurdzinski, Chief Technology Officer, NiuPay



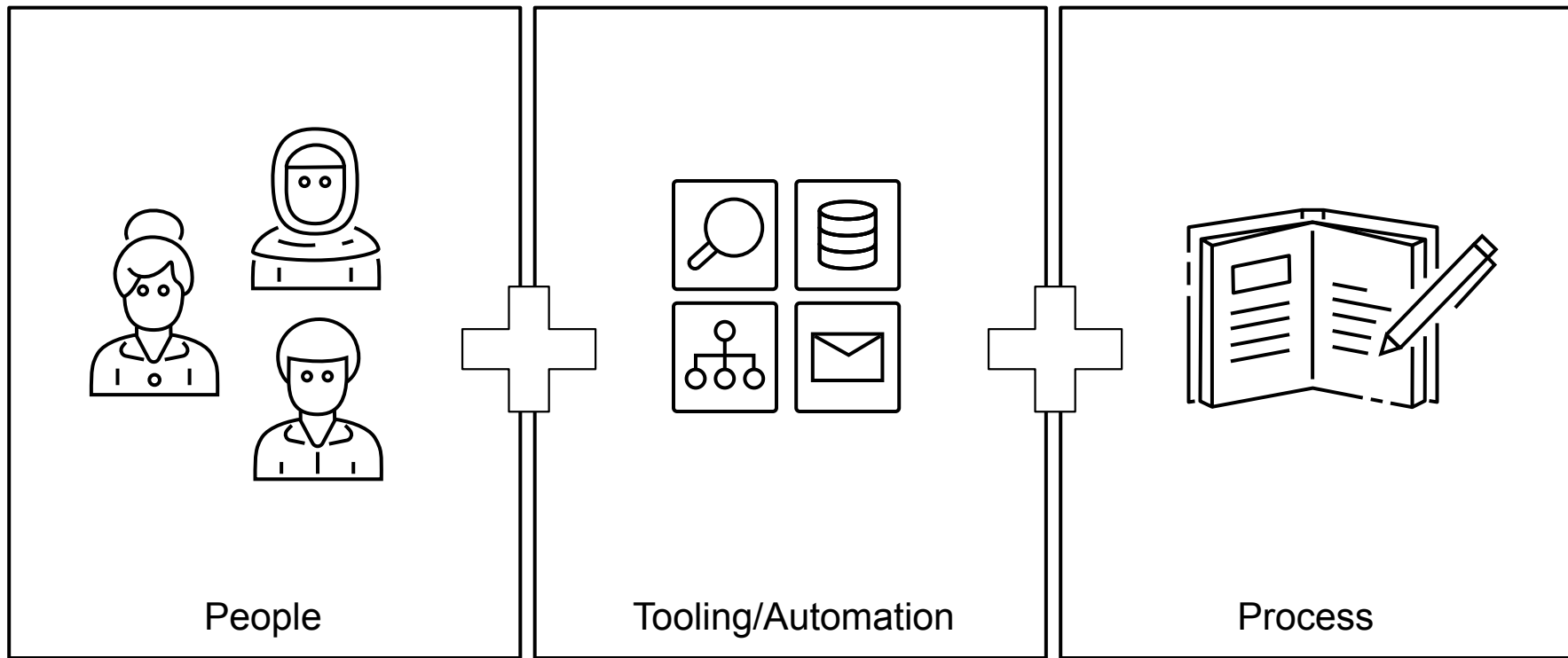
Company:	NiuPay
Industry:	SaaS and BPaaS
Country:	Papua New Guinea
Employees:	11-50
Website:	www.niupay.com.pg

About NiuPay

NiuPay is a horizontal SaaS (Software-as-a-Service) and BPaaS (Business-Process-as-a-Service) solutions company with a mission to rapidly introduce affordable, cloud-native technologies into the South Pacific region.

FinOps @ AWS – Summary...

Success Factors - In a Nutshell...



Resources

Resources

	https://amzn.to/30D0kuN
AWS Cloud Financial Management Guide	https://amzn.to/2JyHZtm
AWS CFM customer success stories	https://amzn.to/3lIt4tC
AWS Well-Architected Cost Optimization Whitepaper	https://go.aws/3v22mm8
AWS Well-Architected Tool	https://amzn.to/2H3tKer
AWS Well-Architected Cost Optimization Labs	https://bit.ly/2Bh8qPK
AWS Training & Certification: Cost Management Ramp-Up Guide	https://bit.ly/30zoLOr
AWS Cloud Financial Management for Builders (course)	https://amzn.to/2XRbOtp
AWS Cloud for Finance Professionals (course)	https://go.aws/3ITB6LO
AWS CFM Peer Connect	https://amzn.to/3qtWU98
AWS Cloud Financial Management Blog	https://amzn.to/2Mqjhck
AWS Cloud Management Tools Competency Partners	https://amzn.to/2MrtB3F
FinOps Foundation	https://bit.ly/2PtLoJg





Thank you for listening...

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FinOps on nOps by



Satish Bora

GM,
satish@nops.io



We are serious about **skills**



**Advanced
Technology
Partner**



**Well architected
Partner**

**Certified Cloud
Management
Tool**



**Saving
millions of \$
for Customers
by automations**



Trusted by



23andMe



houzz



paystack

“Cloud cost can go completely **out of control if you aren’t very careful”**



**Easy to Spin Up,
Difficult to
Manage**



**Complex and
Time
Consuming**



**Expensive &
Wasteful**

Getting engineers to
take action

39%

Accurate
Forecasting

26%

Full allocation of
costs

23%

Aligning finance
to tech teams

22%

Dealing with
shared costs

33%

Reducing waste for
unused resources

24%

Container
costs

11%

Other

7%

Non-IaaS
costs like
SaaS

7%

2022 State of FinOps Report - FinOps Foundation

Myths of FinOps



It's only for large companies



Without FinOps certified team this is impossible to implement



It's complex process



To implement FinOps, we require to do upfront investment



I will plan in next financial year or next quarter - No Bandwidth



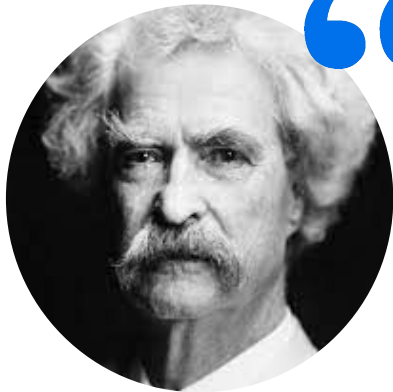
It's not my goal - CEO/CFO will worry about this

Key Ingredients

- Framework - Inform -> Optimize -> Operation
- Visibility - Drill down - Details - Context
- Key Reports & Dashboards
- Opportunities
- Manual and Automations
- Prioritization



Getting Started



The secret of getting ahead is getting started. The secret of getting started is breaking your complex overwhelming tasks into small manageable tasks, and starting on the first one."

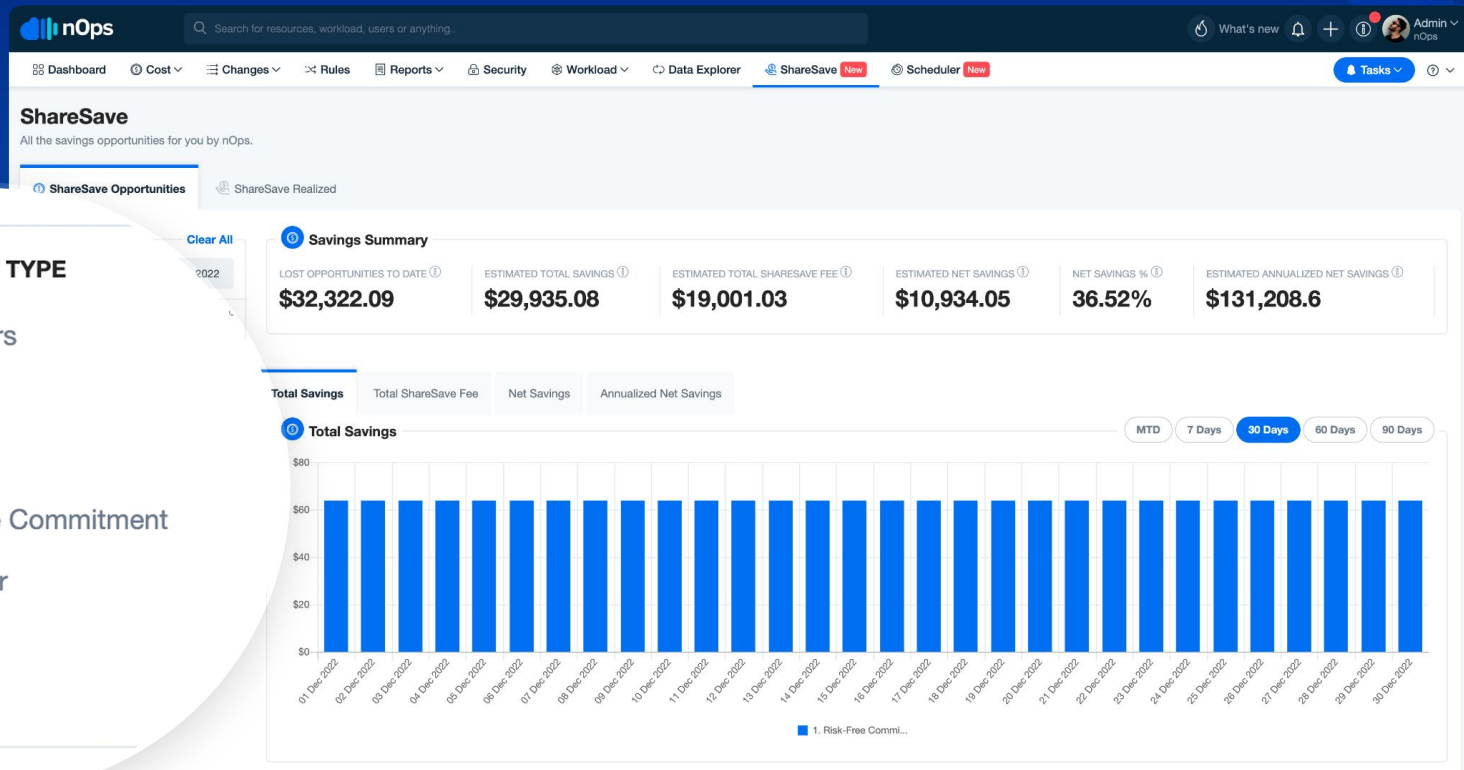
Mark Twain



FinOps on nOps

We only charge for what we save.

Saving Opportunities



Shift Left



Through a one-step integration with GitHub Actions, automates a cost preview for any of your developer's Git Pull Requests.



Gives early insights for changes to any of your Terraform repositories



Enables FinOps to implement and ensure budgets proactively – now integrated with and part of the development workflow, this will be early in the process and with minimal staff churn.

nOps GitHub Terraform Comparison

[Open](#) yojrajopcito wants to merge 2 commits into `main` from `nOps-github-action-demo`

Conversation 3 Commits 2 Checks 2 Files changed 2



nOps Agent commented yesterday

No description provided.

Added changes in terraform plan

nOps Agent force-pushed the `nOps-github-action-demo` branch from `ab7eabc` to `2069a0a` yesterday



nOps Agent commented yesterday

Auth

Total estimated monthly cost impact for your projects is **-\$41.62**

Project	Previous	New	Diff
terraform_project1	\$83.38	\$41.76	-\$41.62
terraform_project3	\$24.91	\$24.91	+\$0.0
terraform_project4	\$83.38	\$83.38	+\$0.0
terraform_project2	-	-	+\$0.0

Added terraform plan changes

Unified Cloud Interface

Access to all your cloud data at your fingertips through GraphQL endpoints.



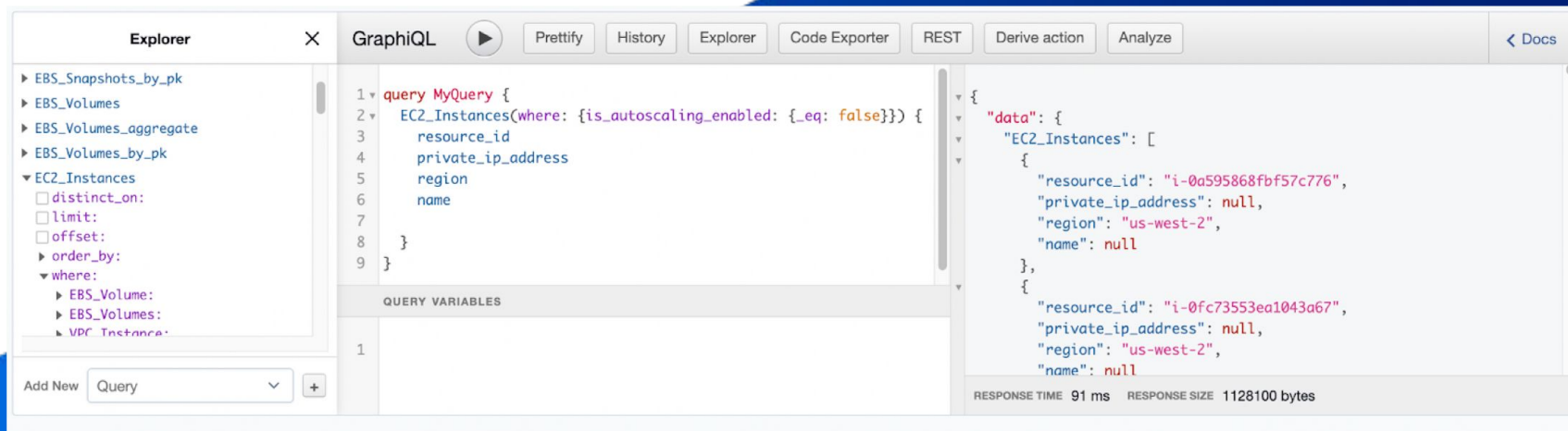
**Explore schema and
create policies**



**No engineering
experience required**



**Quickly embed cloud
data in your workflow**



The screenshot displays the nOps GraphQL interface. On the left, the 'Explorer' panel shows a tree view of cloud resources including EBS_Snapshots_by_pk, EBS_Volumes, EBS_Volumes_aggregate, EBS_Volumes_by_pk, and EC2_Instances. The 'EC2_Instances' resource is selected, showing options for distinct_on, limit, offset, and order_by. The main panel shows a GraphQL query named 'MyQuery' that filters EC2 instances by 'is_autoscaling_enabled' (false) and returns fields like resource_id, private_ip_address, region, and name. Below the query, the 'QUERY VARIABLES' section is empty. On the right, the JSON response is displayed, showing a list of two EC2 instances with their respective IDs, private IP addresses, regions, and names. At the bottom right, the response time is 91 ms and the response size is 1128100 bytes.

```

1 query MyQuery {
2   EC2_Instances(where: {is_autoscaling_enabled: {_eq: false}}) {
3     resource_id
4     private_ip_address
5     region
6     name
7   }
8 }
9

```

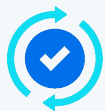
```

{
  "data": {
    "EC2_Instances": [
      {
        "resource_id": "i-0a595868fbf57c776",
        "private_ip_address": null,
        "region": "us-west-2",
        "name": null
      },
      {
        "resource_id": "i-0fc73553ea1043a67",
        "private_ip_address": null,
        "region": "us-west-2",
        "name": null
      }
    ]
  }
}

```

RESPONSE TIME 91 ms RESPONSE SIZE 1128100 bytes

nOps – Measurable Benefits



**nOps Setup - Less
than 15 minutes**



**Automated findings
and discovery
within minutes**



**Risk Free
Commitments
Cost Saving > 25%**



**Total Control over
Security & Data**



**Ongoing Control
and Continuous
Compliance**



**Unique Shared
Save Model
Increased
Efficiency**



**Business Growth
and Improved
CSAT**

Flexibly Managing AWS Cost at WGTWO with nOps

Matt Long

Hi, my name is Matt

And I hate booking travel



Hi, my name is Matt

And I hate booking travel

And I hate managing cost on AWS



Agenda

- ❏ WGTWO
- ❏ How we got here
- ❏ Where to now?



wgtwo

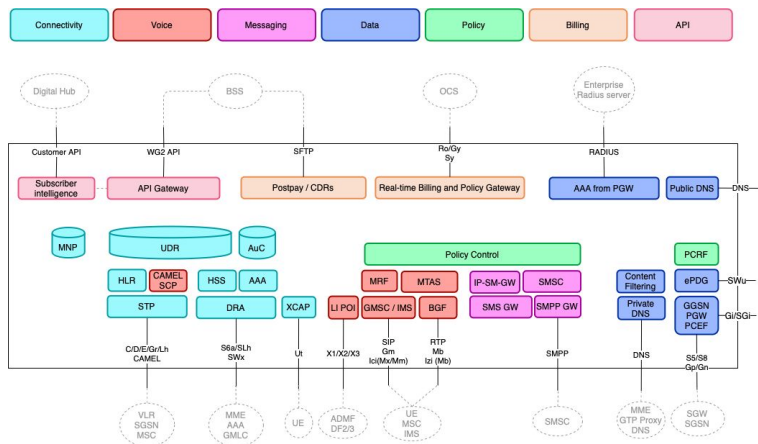
aws



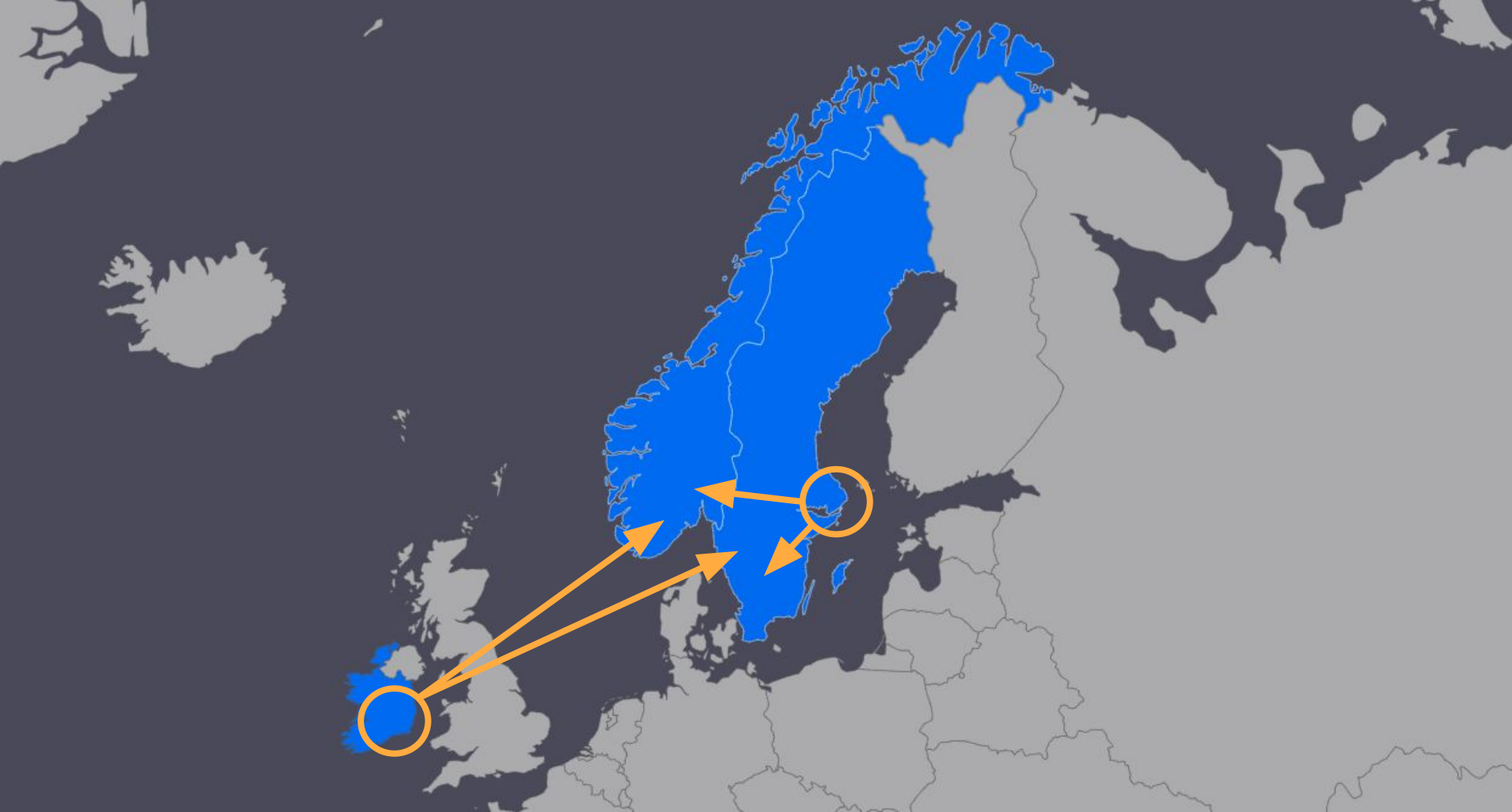
From <https://github.com/nickel0/3GPP-Overall-Architecture>

-
- GSPF Overall Architecture and Specifications**
- This diagram illustrates the overall architecture and specifications of the GSPF system. It shows a central hub-and-spoke model where various components are interconnected.
- Central Hub:** The main component is labeled "GSPF". It is connected to several other major components, including "GSPF-1", "GSPF-2", "GSPF-3", "GSPF-4", "GSPF-5", "GSPF-6", "GSPF-7", "GSPF-8", "GSPF-9", "GSPF-10", "GSPF-11", "GSPF-12", "GSPF-13", "GSPF-14", "GSPF-15", "GSPF-16", "GSPF-17", "GSPF-18", "GSPF-19", "GSPF-20", "GSPF-21", "GSPF-22", "GSPF-23", "GSPF-24", "GSPF-25", "GSPF-26", "GSPF-27", "GSPF-28", "GSPF-29", "GSPF-30", "GSPF-31", "GSPF-32", "GSPF-33", "GSPF-34", "GSPF-35", "GSPF-36", "GSPF-37", "GSPF-38", "GSPF-39", "GSPF-40", "GSPF-41", "GSPF-42", "GSPF-43", "GSPF-44", "GSPF-45", "GSPF-46", "GSPF-47", "GSPF-48", "GSPF-49", "GSPF-50", "GSPF-51", "GSPF-52", "GSPF-53", "GSPF-54", "GSPF-55", "GSPF-56", "GSPF-57", "GSPF-58", "GSPF-59", "GSPF-60", "GSPF-61", "GSPF-62", "GSPF-63", "GSPF-64", "GSPF-65", "GSPF-66", "GSPF-67", "GSPF-68", "GSPF-69", "GSPF-70", "GSPF-71", "GSPF-72", "GSPF-73", "GSPF-74", "GSPF-75", "GSPF-76", "GSPF-77", "GSPF-78", "GSPF-79", "GSPF-80", "GSPF-81", "GSPF-82", "GSPF-83", "GSPF-84", "GSPF-85", "GSPF-86", "GSPF-87", "GSPF-88", "GSPF-89", "GSPF-90", "GSPF-91", "GSPF-92", "GSPF-93", "GSPF-94", "GSPF-95", "GSPF-96", "GSPF-97", "GSPF-98", "GSPF-99", "GSPF-100".
 - Peripheral Components:** These include "GSPF-1" through "GSPF-100", each representing a specific function or module. They are connected to the central hub via various protocols and interfaces.
 - Specifications:** Each component has associated specifications, such as "GSPF-1: 100 Mbps", "GSPF-2: 200 Mbps", etc. These specifications define the performance and capabilities of each module.
 - Interconnections:** The diagram shows a dense web of connections between components, indicating a highly integrated and scalable architecture.
- The diagram also includes several smaller inset diagrams and tables providing additional details about the system's architecture and specifications.
- Inset Diagrams:**
- GSPF System Functionality:** A flowchart showing the sequence of operations from input to output, involving components like "GSPF-1", "GSPF-2", "GSPF-3", "GSPF-4", "GSPF-5", "GSPF-6", "GSPF-7", "GSPF-8", "GSPF-9", "GSPF-10", "GSPF-11", "GSPF-12", "GSPF-13", "GSPF-14", "GSPF-15", "GSPF-16", "GSPF-17", "GSPF-18", "GSPF-19", "GSPF-20", "GSPF-21", "GSPF-22", "GSPF-23", "GSPF-24", "GSPF-25", "GSPF-26", "GSPF-27", "GSPF-28", "GSPF-29", "GSPF-30", "GSPF-31", "GSPF-32", "GSPF-33", "GSPF-34", "GSPF-35", "GSPF-36", "GSPF-37", "GSPF-38", "GSPF-39", "GSPF-40", "GSPF-41", "GSPF-42", "GSPF-43", "GSPF-44", "GSPF-45", "GSPF-46", "GSPF-47", "GSPF-48", "GSPF-49", "GSPF-50", "GSPF-51", "GSPF-52", "GSPF-53", "GSPF-54", "GSPF-55", "GSPF-56", "GSPF-57", "GSPF-58", "GSPF-59", "GSPF-60", "GSPF-61", "GSPF-62", "GSPF-63", "GSPF-64", "GSPF-65", "GSPF-66", "GSPF-67", "GSPF-68", "GSPF-69", "GSPF-70", "GSPF-71", "GSPF-72", "GSPF-73", "GSPF-74", "GSPF-75", "GSPF-76", "GSPF-77", "GSPF-78", "GSPF-79", "GSPF-80", "GSPF-81", "GSPF-82", "GSPF-83", "GSPF-84", "GSPF-85", "GSPF-86", "GSPF-87", "GSPF-88", "GSPF-89", "GSPF-90", "GSPF-91", "GSPF-92", "GSPF-93", "GSPF-94", "GSPF-95", "GSPF-96", "GSPF-97", "GSPF-98", "GSPF-99", "GSPF-100".
 - GSPF System Performance:** A bar chart comparing the performance of different components, showing metrics like "Throughput", "Latency", and "Error Rate".
 - GSPF System Security:** A diagram illustrating the security measures implemented in the system, including encryption, authentication, and access control.
 - GSPF System Scalability:** A diagram showing how the system can scale to handle increasing loads, with components like "GSPF-1", "GSPF-2", "GSPF-3", "GSPF-4", "GSPF-5", "GSPF-6", "GSPF-7", "GSPF-8", "GSPF-9", "GSPF-10", "GSPF-11", "GSPF-12", "GSPF-13", "GSPF-14", "GSPF-15", "GSPF-16", "GSPF-17", "GSPF-18", "GSPF-19", "GSPF-20", "GSPF-21", "GSPF-22", "GSPF-23", "GSPF-24", "GSPF-25", "GSPF-26", "GSPF-27", "GSPF-28", "GSPF-29", "GSPF-30", "GSPF-31", "GSPF-32", "GSPF-33", "GSPF-34", "GSPF-35", "GSPF-36", "GSPF-37", "GSPF-38", "GSPF-39", "GSPF-40", "GSPF-41", "GSPF-42", "GSPF-43", "GSPF-44", "GSPF-45", "GSPF-46", "GSPF-47", "GSPF-48", "GSPF-49", "GSPF-50", "GSPF-51", "GSPF-52", "GSPF-53", "GSPF-54", "GSPF-55", "GSPF-56", "GSPF-57", "GSPF-58", "GSPF-59", "GSPF-60", "GSPF-61", "GSPF-62", "GSPF-63", "GSPF-64", "GSPF-65", "GSPF-66", "GSPF-67", "GSPF-68", "GSPF-69", "GSPF-70", "GSPF-71", "GSPF-72", "GSPF-73", "GSPF-74", "GSPF-75", "GSPF-76", "GSPF-77", "GSPF-78", "GSPF-79", "GSPF-80", "GSPF-81", "GSPF-82", "GSPF-83", "GSPF-84", "GSPF-85", "GSPF-86", "GSPF-87", "GSPF-88", "GSPF-89", "GSPF-90", "GSPF-91", "GSPF-92", "GSPF-93", "GSPF-94", "GSPF-95", "GSPF-96", "GSPF-97", "GSPF-98", "GSPF-99", "GSPF-100".
- Tables:**
- Table 1: GSPF System Configuration**

Component	Function	Specification
GSPF-1	Input/Output	100 Mbps
GSPF-2	Processing	200 Mbps
GSPF-3	Storage	500 MB
GSPF-4	Network	100 Mbps
GSPF-5	Security	128-bit
GSPF-6	Scalability	1000 nodes
GSPF-7	Reliability	99.9%
GSPF-8	Flexibility	100% compatible
GSPF-9	Interoperability	100% compatible
GSPF-10	Compatibility	100% compatible
GSPF-11	Performance	100% compatible
GSPF-12	Efficiency	100% compatible
GSPF-13	Cost-effectiveness	100% compatible
GSPF-14	Maintainability	100% compatible
GSPF-15	Supportability	100% compatible
GSPF-16	Upgradeability	100% compatible
GSPF-17	Expandability	100% compatible
GSPF-18	Modifiability	100% compatible
GSPF-19	Configurability	100% compatible
GSPF-20	Customizability	100% compatible
GSPF-21	Adaptability	100% compatible
GSPF-22	Resilience	100% compatible
GSPF-23	Robustness	100% compatible
GSPF-24	Durability	100% compatible
GSPF-25	Stability	100% compatible
GSPF-26	Consistency	100% compatible
GSPF-27	Accuracy	100% compatible
GSPF-28	Precision	100% compatible
GSPF-29	Resolution	100% compatible
GSPF-30	Detail	100% compatible
GSPF-31	Clarity	100% compatible
GSPF-32	Transparency	100% compatible
GSPF-		







Cost optimization is... not easy

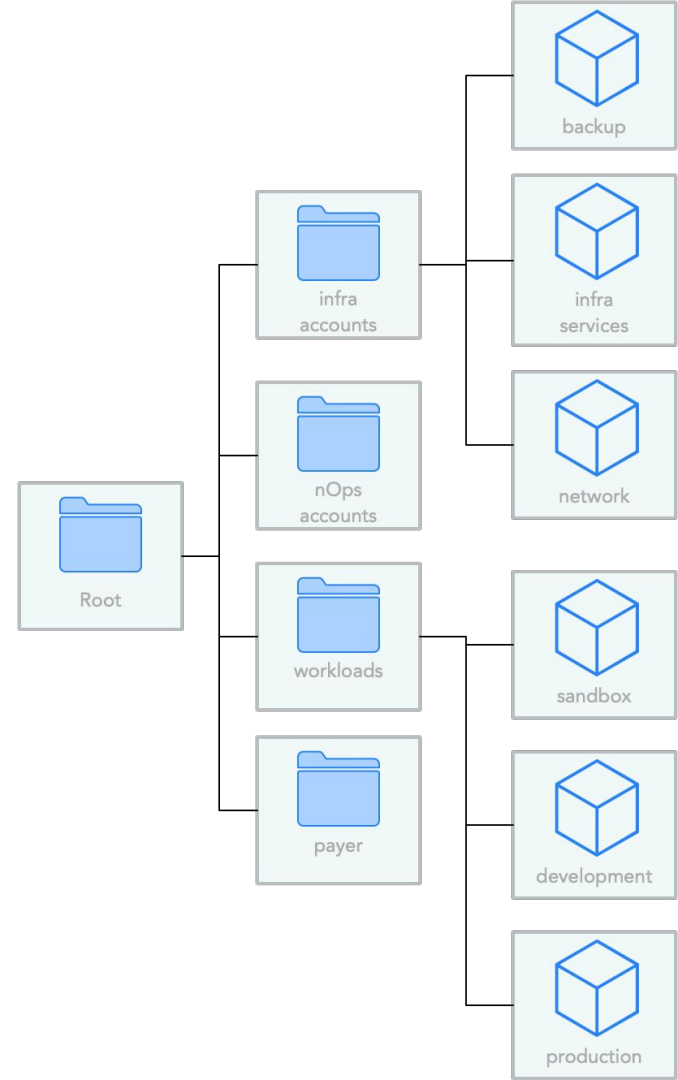
- ☐ Type?
- ☐ Region?
- ☐ Term? (1-, 3- 5- year?)
- ☐ No, partial or all up-front?
- ☐ Tenancy?
- ☐ OS? (17!! options)
- ☐ Reserved instances or savings plans?
- ☐ Standard, convertible, scheduled?



MARIA T HOFFMAN/SHUTTERSTOCK

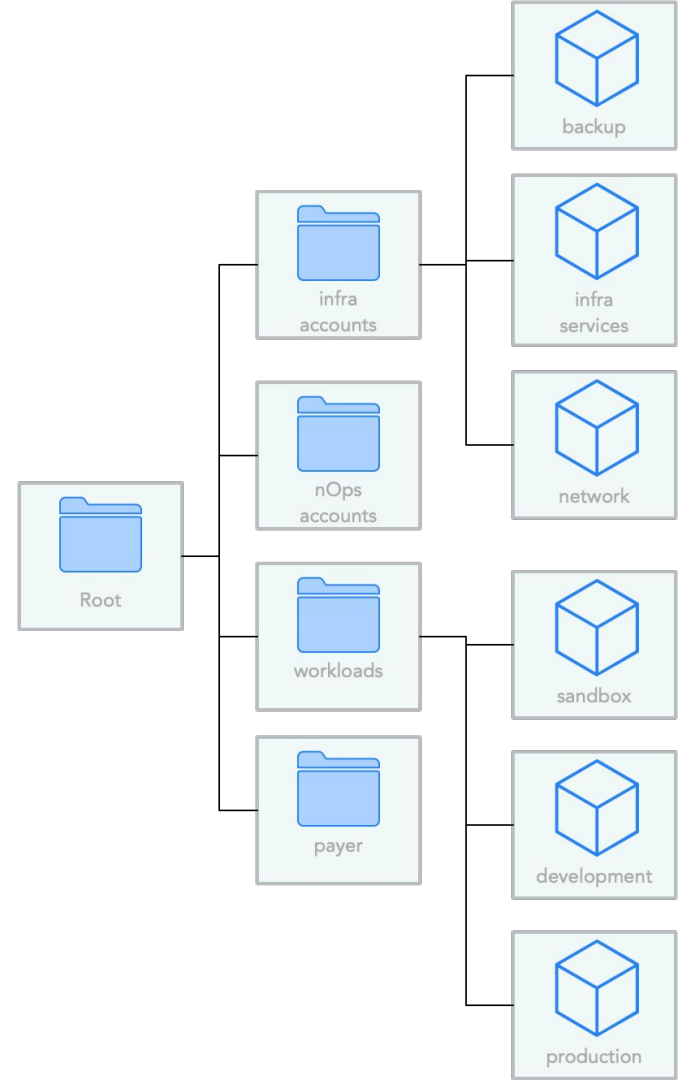
Cost management isn't easy either

- ❑ What if we need to scale up?
- ❑ What if we need to scale down?
- ❑ What if we need different instance types for new workloads?
- ❑ What if we need to change regions?
- ❑ What account is relevant?
- ❑ How can we track resources across all accounts?
- ❑ Is this resource still being used?



Cost management isn't easy either

- ❑ What if we need to scale up?
- ❑ What if we need to scale down?
- ❑ What if we need different instance types for new workloads?
- ❑ What if we need to change regions?
- ❑ What account is relevant?
- ❑ How can we track resources across all accounts?
- ❑ Is this resource still being used?
- ❑ **What if we get it wrong?**









To simplify this process, we are working with nOps, an AWS Cloud Management Tools Competency partner, to provide partners with the option to both continuously scan their environments, as well as streamline the FTR process for solutions run from your AWS account (e.g. SaaS products).





Now, you're looking at now, sir. Everything that happens now is happening now.

What I appreciate most about nOps

- ❑ Simplified cost tracking
- ❑ Easy answers to common questions
 - ❑ “What changed in the last month?”
 - ❑ “Do we have any unused resources?”
 - ❑ “Those Athena queries cost how much?”
- ❑ Integration with the Well-Architected Framework and Foundational Technical Review tool in AWS



Well-Architected Framework Reviews

These suddenly became a lot easier!

Pro Tip: AWS Well-Architected Labs has tools to copy reviews from one region to another



Monitor cost proactively



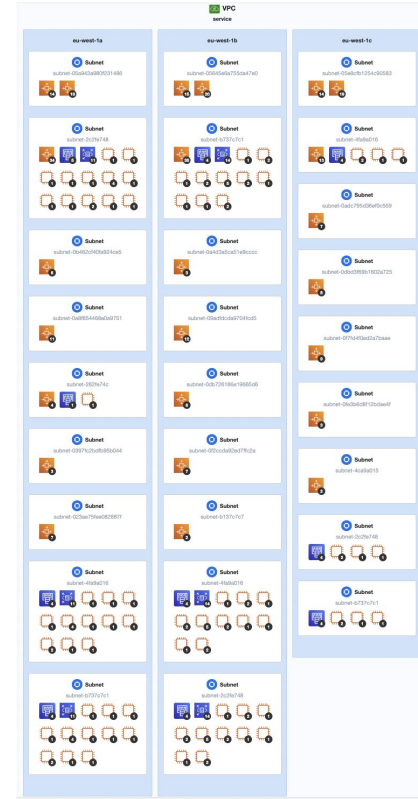
Answer auto-discovered



No violation



Last updated on 29 Nov, 2022



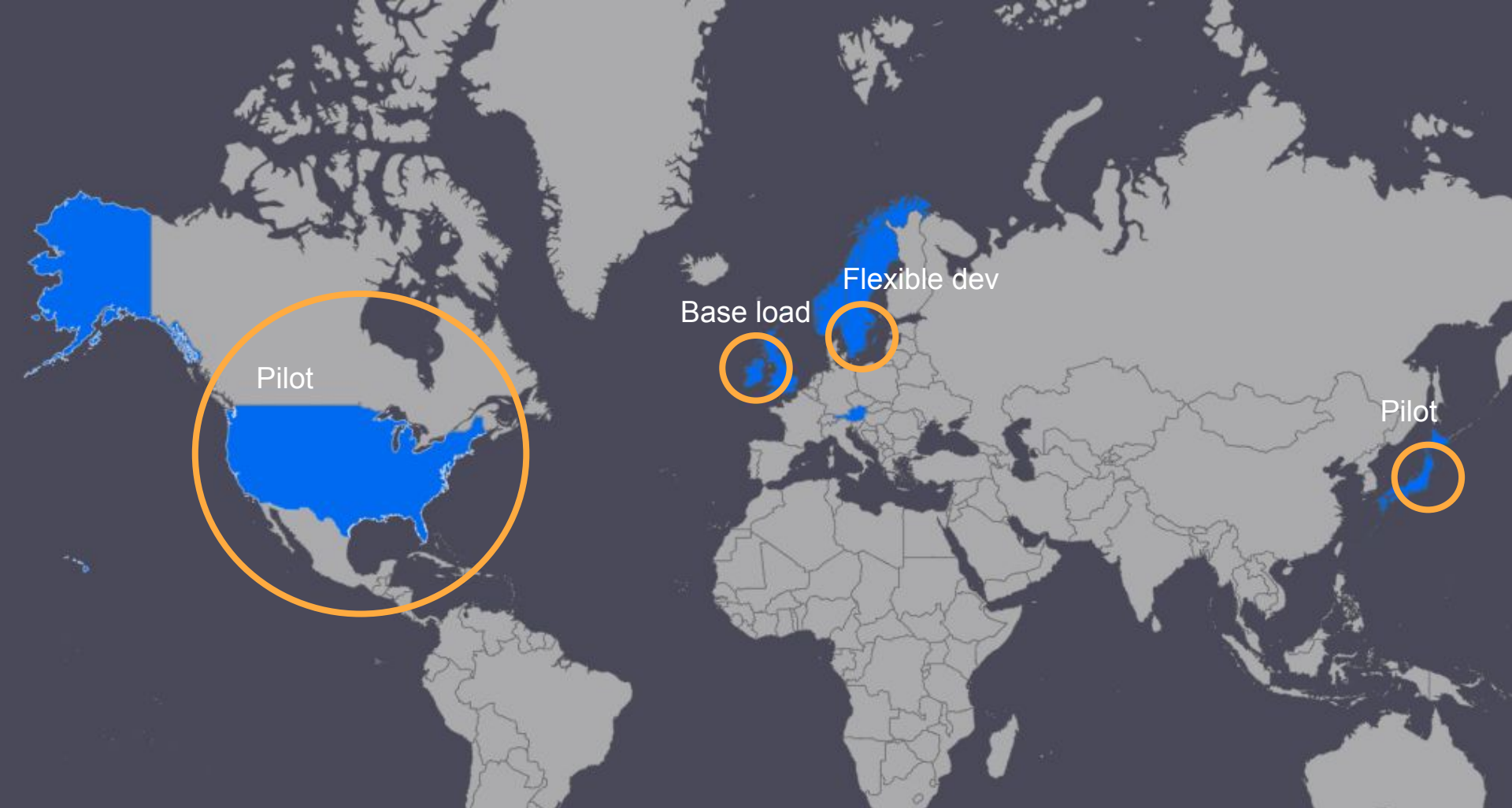
Now... cost optimization feels like optimization

- ❑ 94% RI coverage over the last six months
- ❑ If we managed this ourselves... we'd need to manage this ourselves
- ❑ We have the flexibility to make manual adjustments when needed, but the base rate is a 40% improvement over on-demand cost

🔒 RI Coverage

94%

Average Coverage (hours)



Pilot

Base load

Flexible dev

Pilot

Q&A

