
AWS
re:Invent

FSI303

Fidelity Investments' journey to operationalize cloud observability

David Jackson
Director, Cloud Architecture
Fidelity Investments

Jim Long
Principal Cloud Architect
AWS

© 2020, Amazon Web Services, Inc. or its affiliates. All rights reserved.

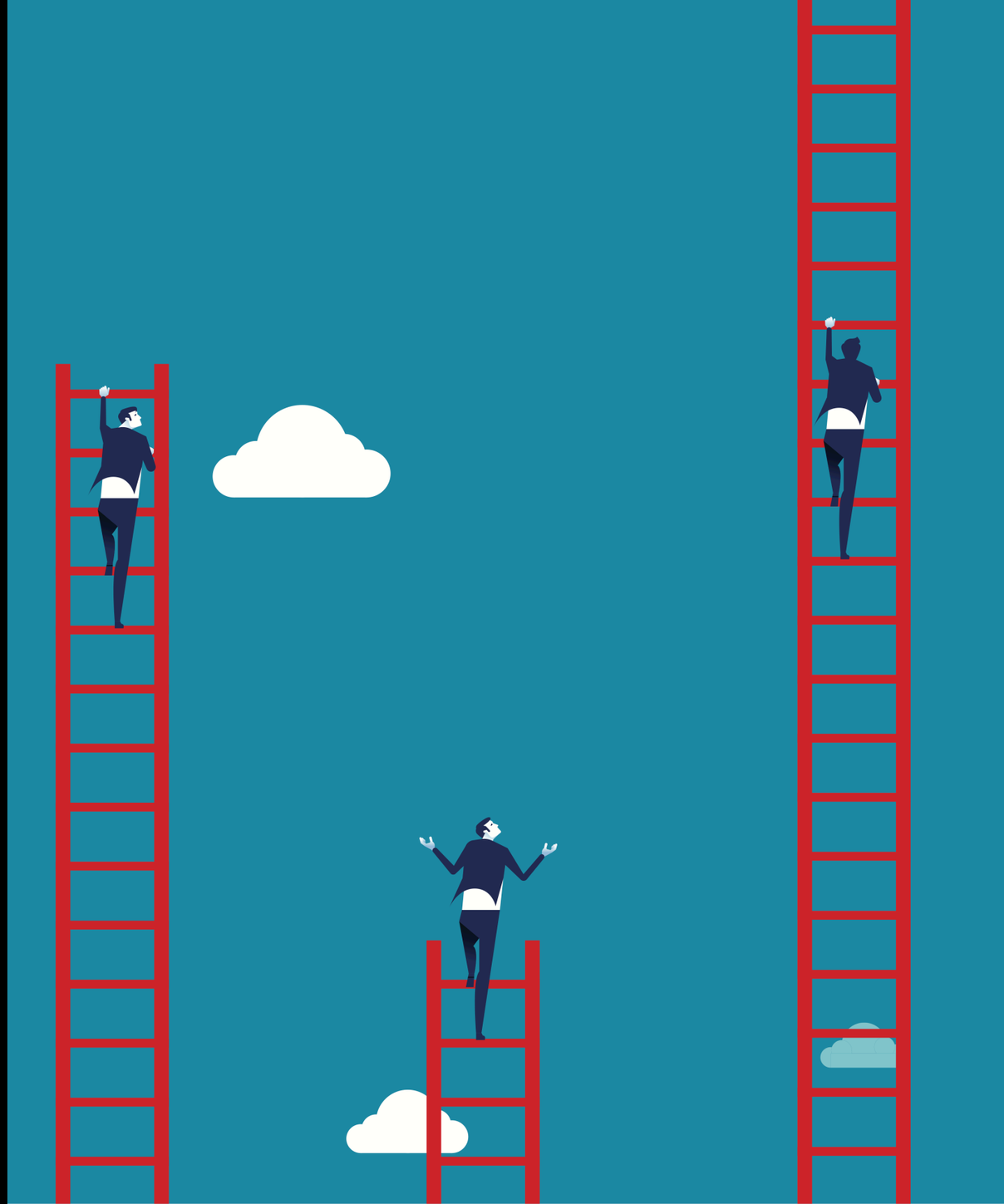
Cloud operations at scale

Rapid pace of public cloud adoption at scale . . .



Cloud operations at scale

. . . resulting in different levels of cloud maturity across the organization . . .

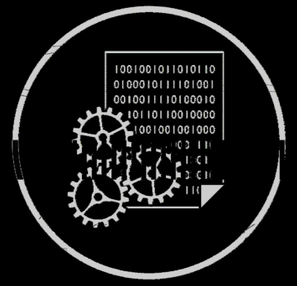


Cloud operations at scale

. . . so to successfully operate in the cloud, we need to gain collective, consistent insights that provide a holistic view of cloud operational health.



Massive scale – And we need to move fast



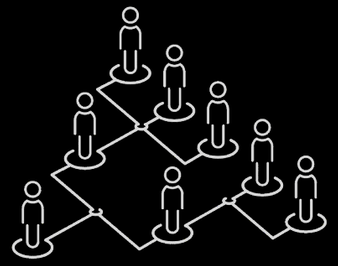
Applications

Hundreds of workloads moving to the cloud across the enterprise



Accounts

Hundreds of accounts spread across multiple regions managed by multiple distinct internal business units



Organizational units

Variety of internal business units are migrating to the cloud, all at different levels of maturity in their cloud journey



Developers

12,000 developers spread across the globe

Agenda

It’s a push and a pull

The data is out there (somewhere)

Go cloud native, go serverless

Cloud observability backed by (near) real-time data



© 2020, Amazon Web Services, Inc. or its affiliates. All rights reserved.

It’s a push and a pull



© 2020, Amazon Web Services, Inc. or its affiliates. All rights reserved.

A bit of push and pull



Cloud event processor

The “push model.” We need to notify our teams and account owners when events of potential impact to our infrastructure occur in our AWS environments.



Cloud operations dashboard

The “pull model.” We need a consolidated view of our entire enterprise cloud operational health to allow every internal BU to analyze, plan, and remediate.

The data is out there (somewhere)



AWS re:Invent

© 2020, Amazon Web Services, Inc. or its affiliates. All rights reserved.

The data exists – We just need to pull it together



AWS Personal Health Dashboard

Displays and emits health events for every upcoming change or issue affecting an AWS account



AWS Support API

Provides data on all support cases for an account going back at least 12 months



AWS Health API

Provides full details about every health event and affected entity sent by AWS to your account's PHD



AWS Organizations

Allows organization of accounts' support case and health data according to your org structure

The data exists – We just need to pull it together



AWS Personal Health Dashboard

Displays and emits health events for every upcoming change or issue affecting an AWS account



AWS Support API

Provides data on all support cases for an account going back at least 12 months



AWS Health API

Provides full details about every health event and affected entity sent by AWS to your account's PHD



AWS Organizations

Allows organization of accounts' support case and health data according to your org structure



Custom Data Sources

Provides additional data points such as account owners, users, cloud inventory

Health API – Key endpoint



`DescribeEventDetailsForOrganization`

Field	Description	Possible values
eventTypeCategory	High level grouping of event type	issue accountNotification scheduledChange
eventScopeCode	‘PUBLIC’ relates to general service alerts	PUBLIC ACCOUNT_SPECIFIC
statusCode	Current event status	OPEN CLOSED UPCOMING

Additional fields:

eventTypeCode, startTime, endTime, region, availabilityZone, service, latestDescription

Support API – Key endpoint



`DescribeCases`

Field	Description	Possible values
serviceCode	Identifier for an AWS service. Categorizes the support case.	Usually the AWS service name or non-specific codes such as *“general guidance”*
severityCode	Criticality of the case	In order of criticality: *low, normal, high, urgent, critical*
status	Current state of the support case	Many possible states, for example: *opened, resolved, work-in-progress, pending-customer-action*
communications	Case interactions’ body, sender, and attachment details	

Additional Fields:

subject, categoryCode, submittedBy, caseId, ccEmailAddresses, timeCreated

Support API – Derived metrics



Field	Description
Mean Time to Acknowledgement (MTTA)	Average initial response time by AWS on a new case. Based on case communications dates. Ignore automated responses.
Mean Time to Resolution (MTTR)	Average resolution response time by AWS on a new case. Based on final case communication date and closed status.

Support API – Derived metrics



Field	Description
Mean Time to Acknowledgement (MTTA)	Average initial response time by AWS on a new case. Based on case communications dates. Ignore automated responses.
Mean Time to Resolution (MTTR)	Average resolution response time by AWS on a new case. Based on final case communication date and closed status.
Case Delayed By Customer	Indicates if the case was waiting seven days for response from the customer.
Case Met SLA	Comparison of Time to Acknowledge (TTA) vs. SLA based on case severity.

Go cloud native, go serverless



AWS re:Invent

© 2020, Amazon Web Services, Inc. or its affiliates. All rights reserved.

The tools exist – And they're all serverless

Amazon CloudWatch



Trigger the batch

AWS Step Functions



Orchestrate the process

AWS Lambda



Collect the data

Amazon DynamoDB



Store the data

Amazon S3



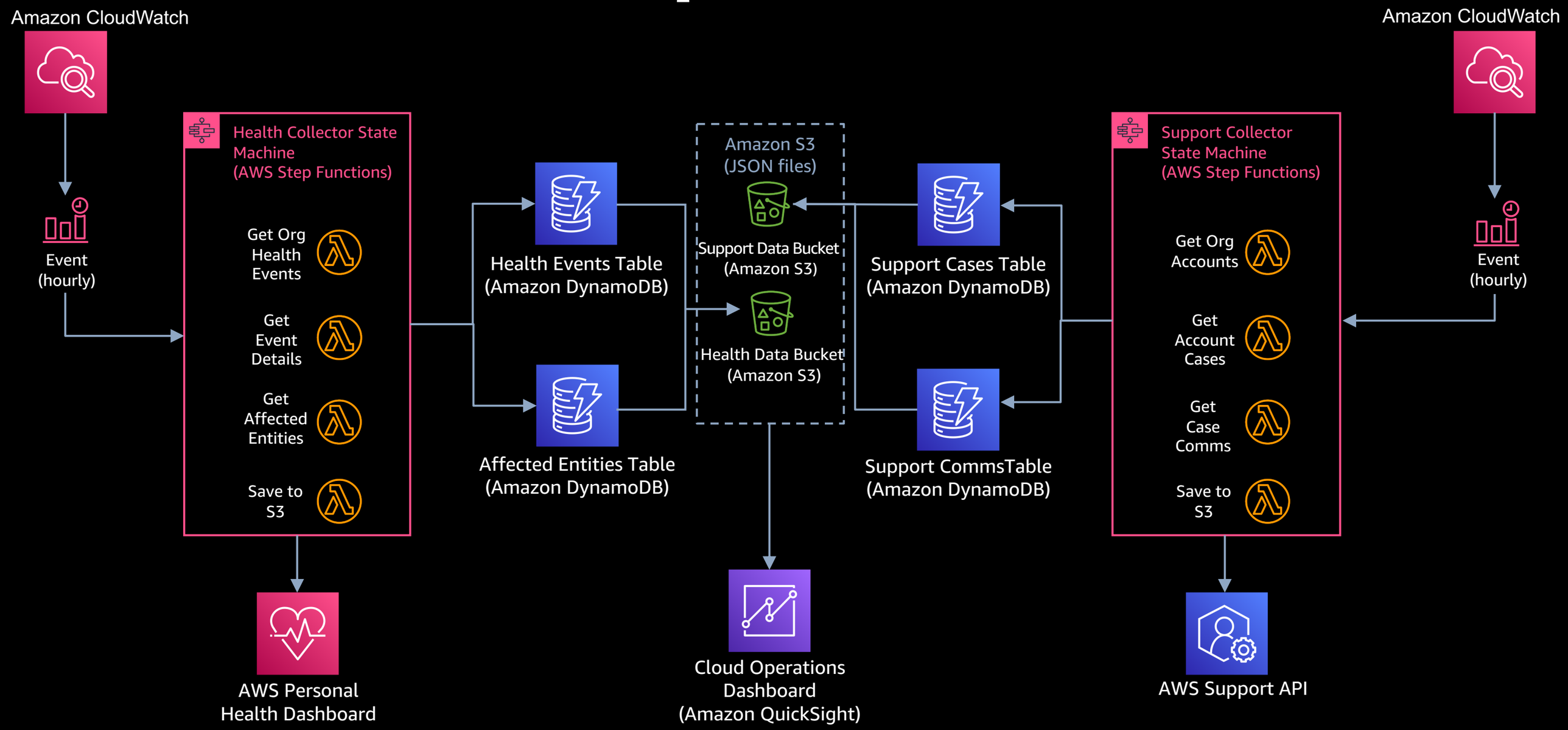
Prepare for consumption

Amazon QuickSight

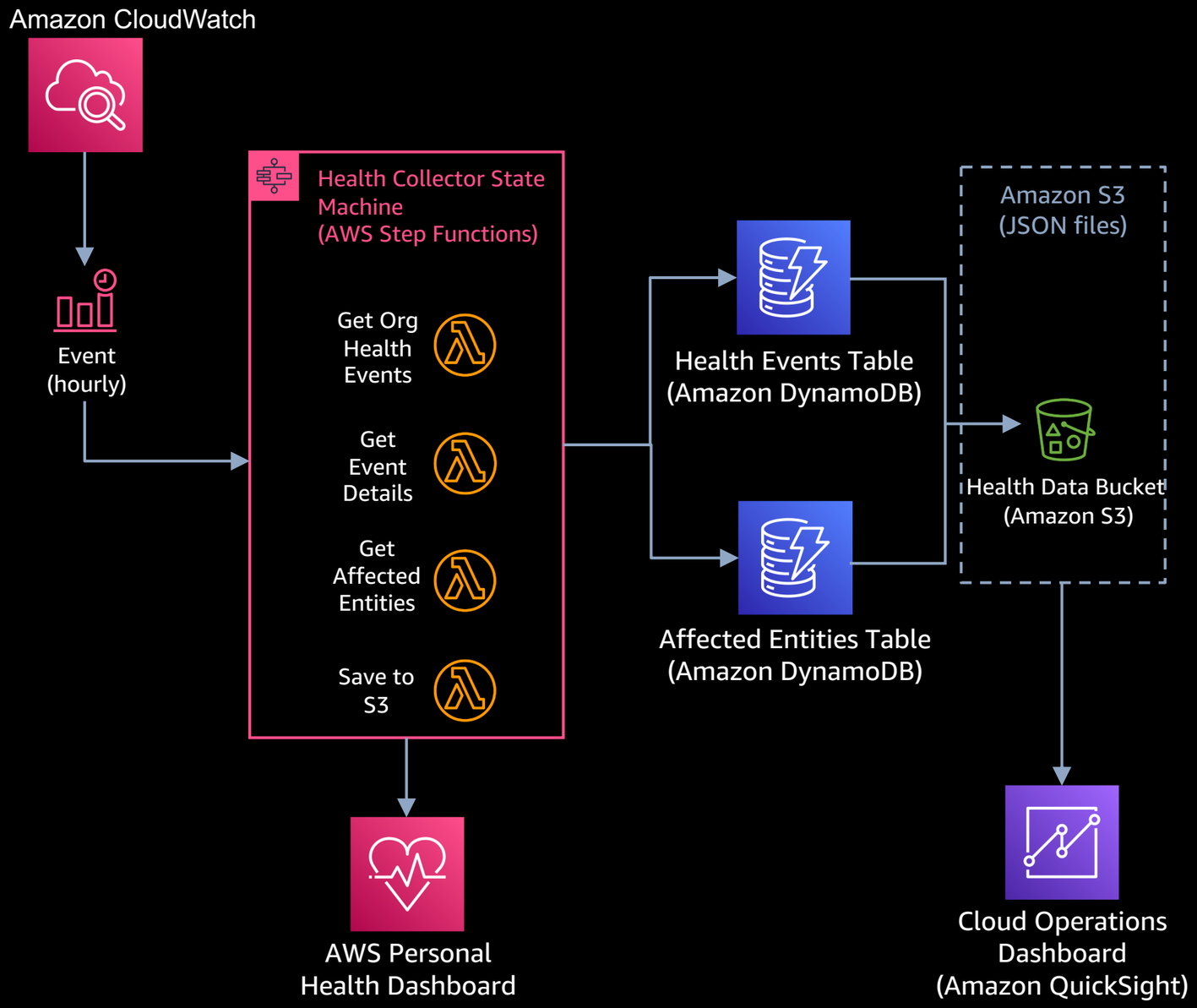


Analyze and share

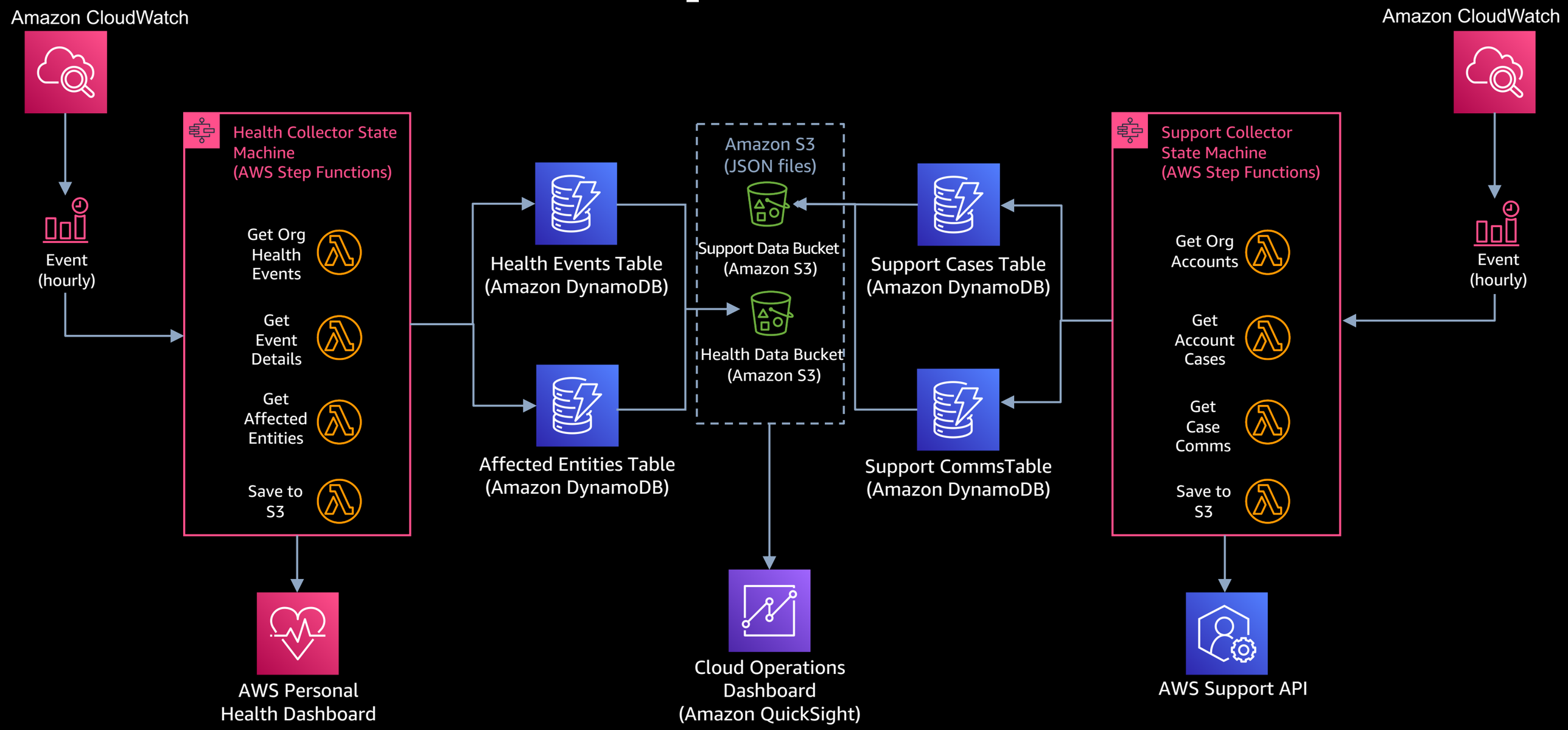
Pull model – Cloud operations dashboard



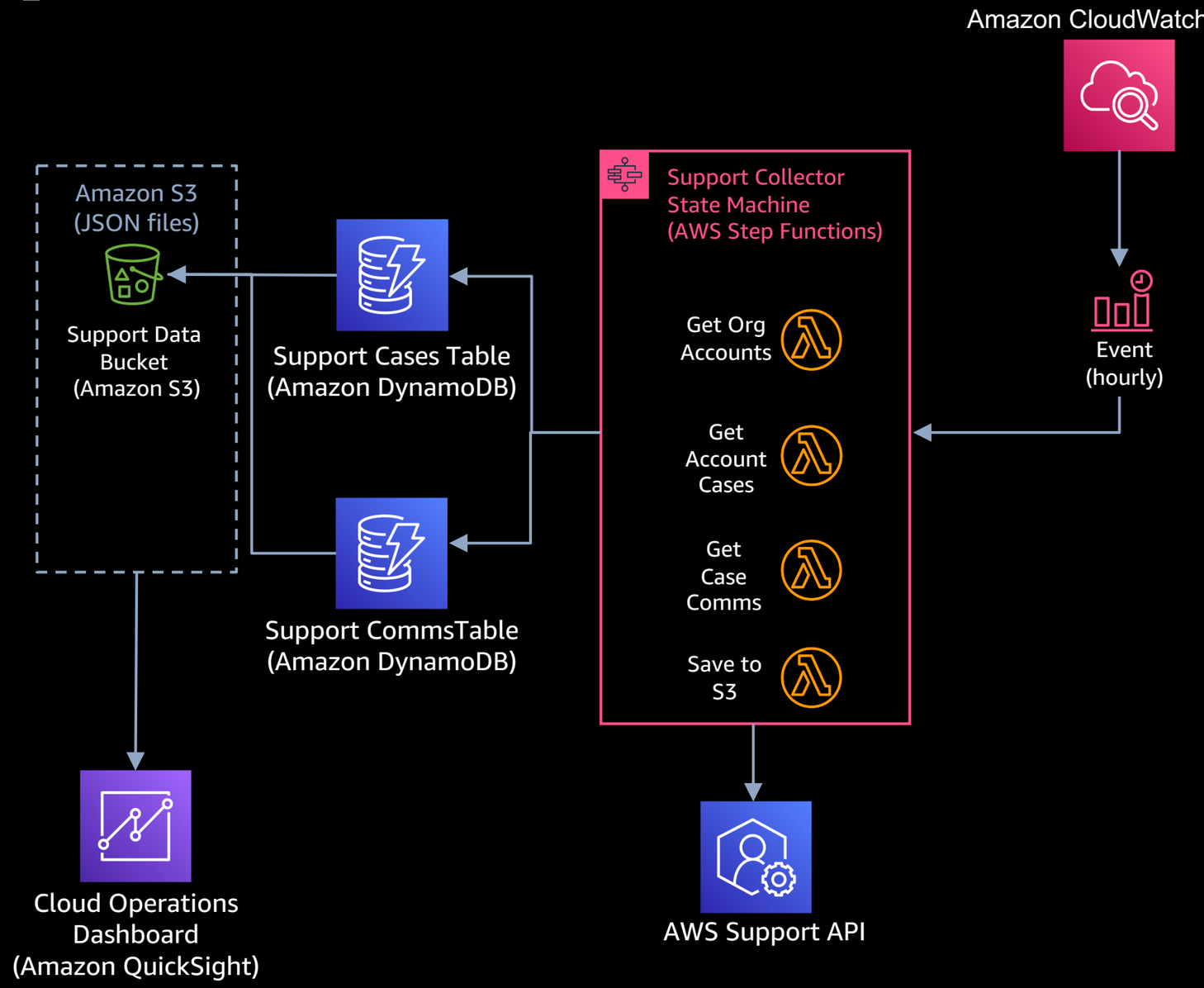
Pull Model – Cloud Operations Dashboard



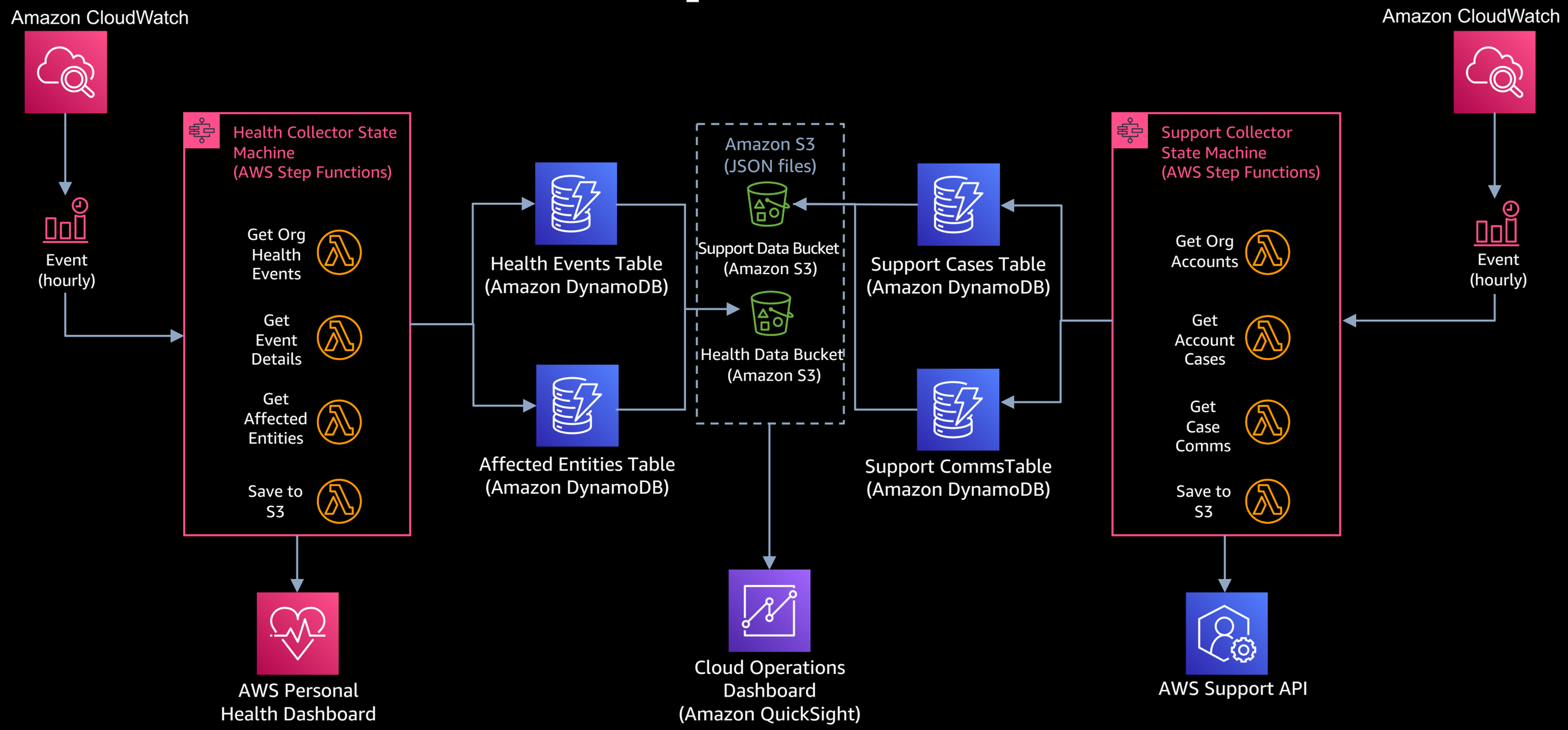
Pull Model – Cloud Operations Dashboard



Pull Model – Cloud Operations Dashboard

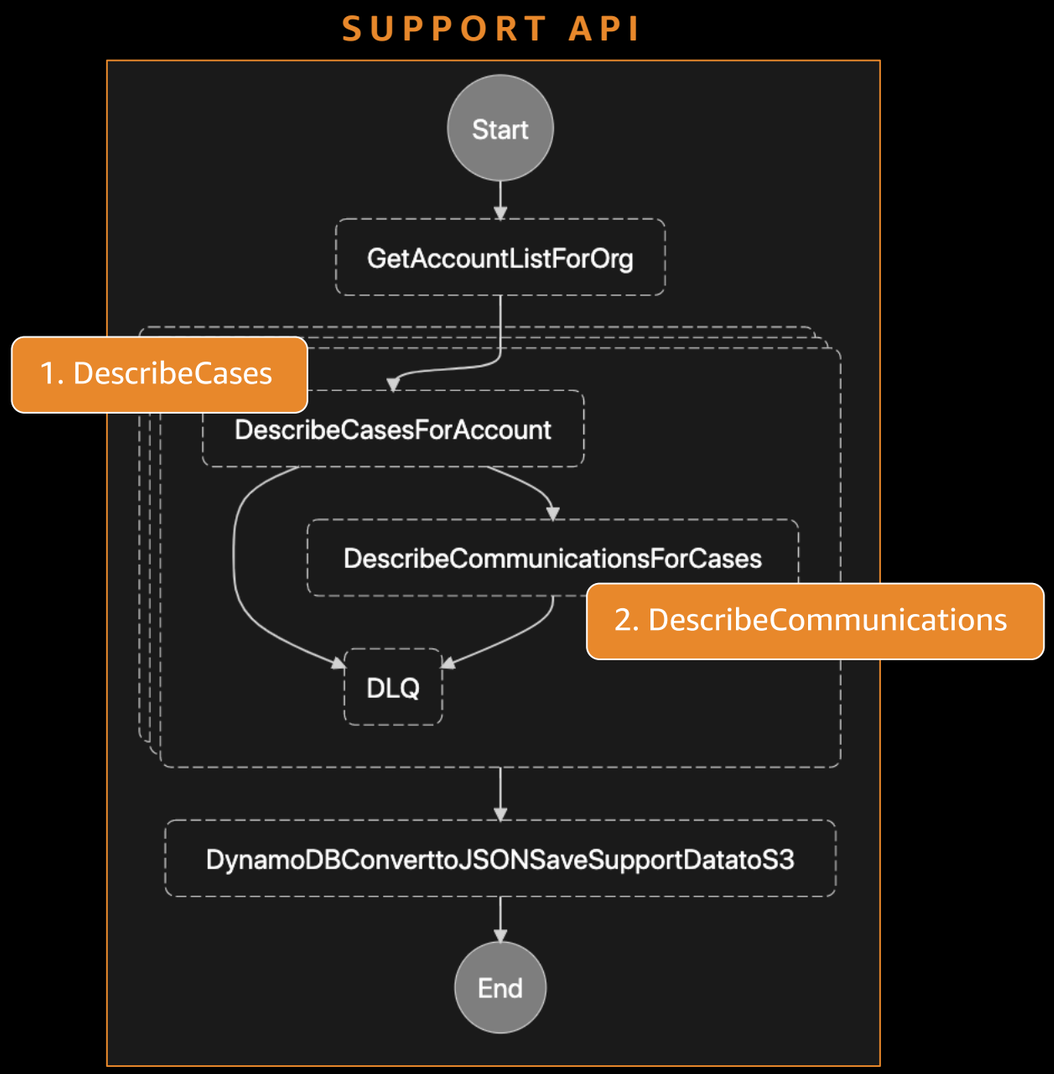


Pull Model – Cloud Operations Dashboard



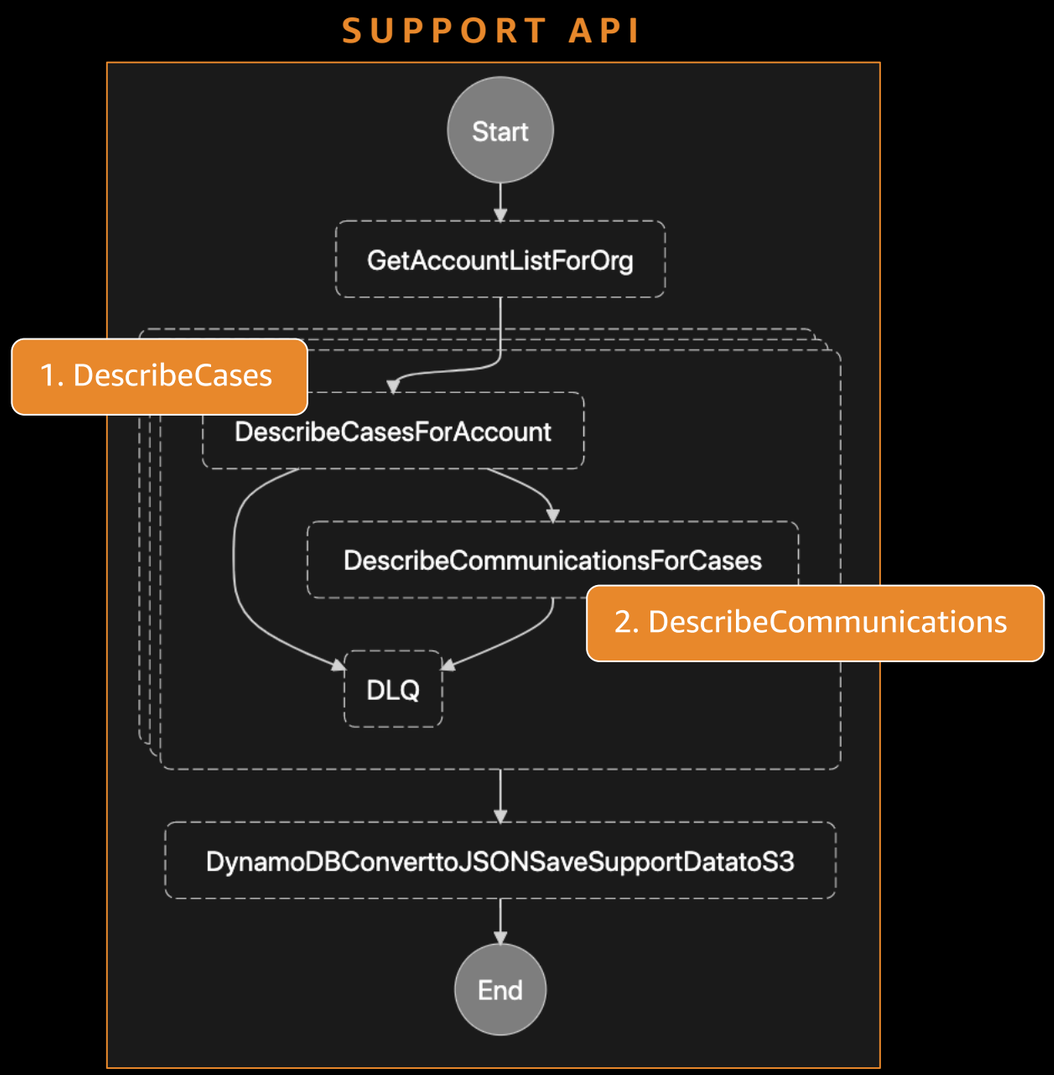
Collector workflows

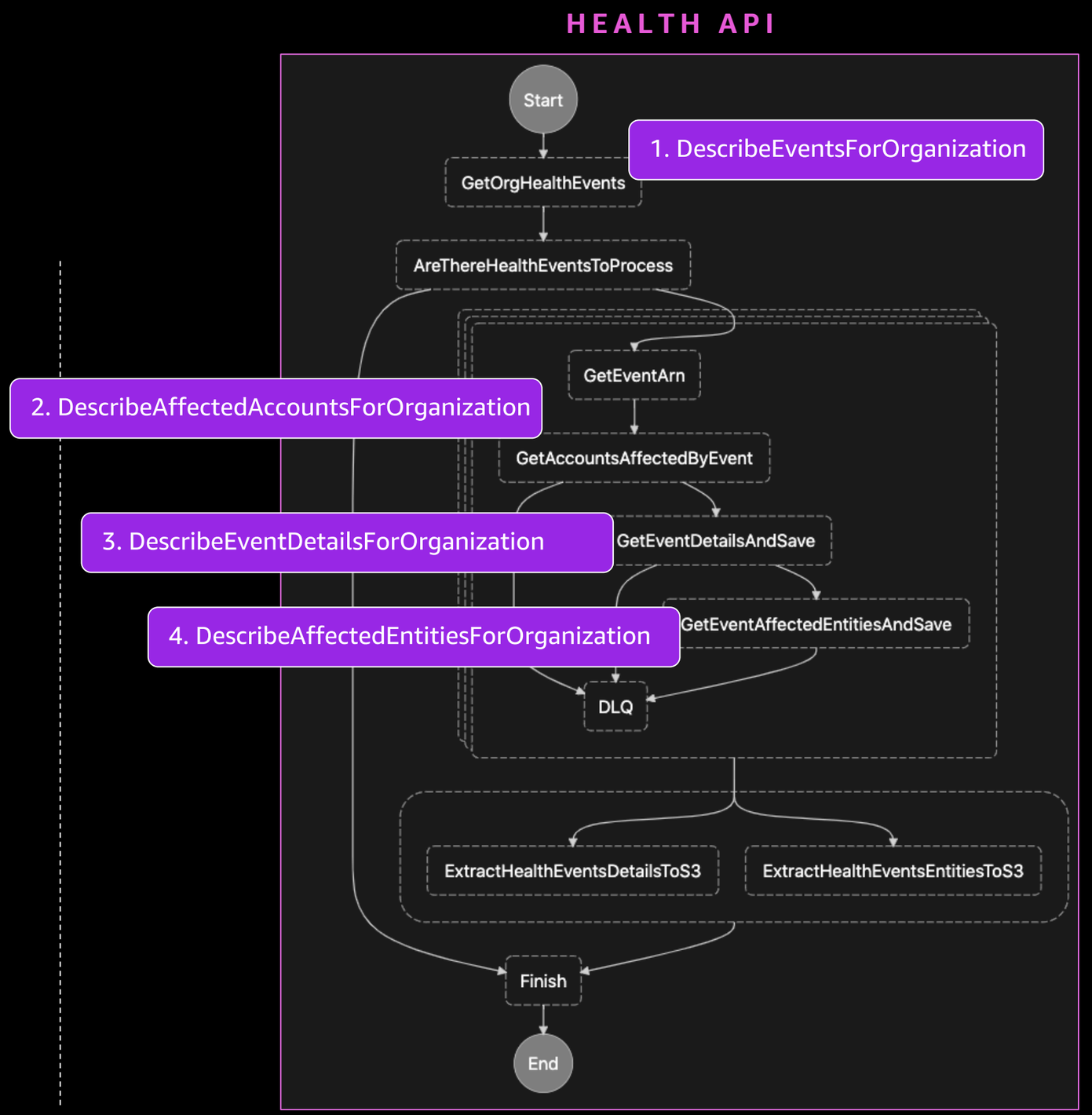
WITH AWS API CALL SEQUENCE



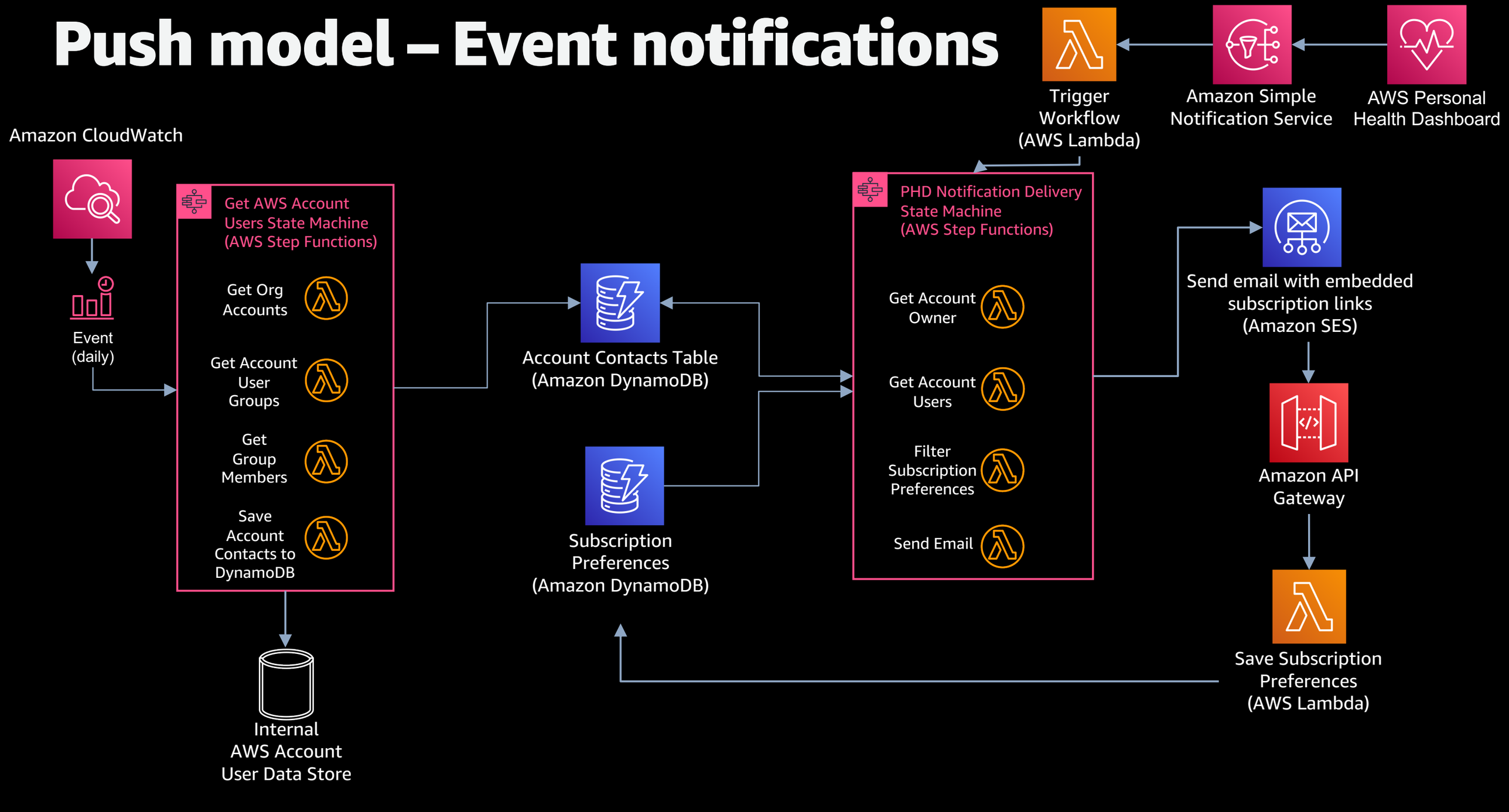
Collector workflows

WITH AWS API CALL SEQUENCE

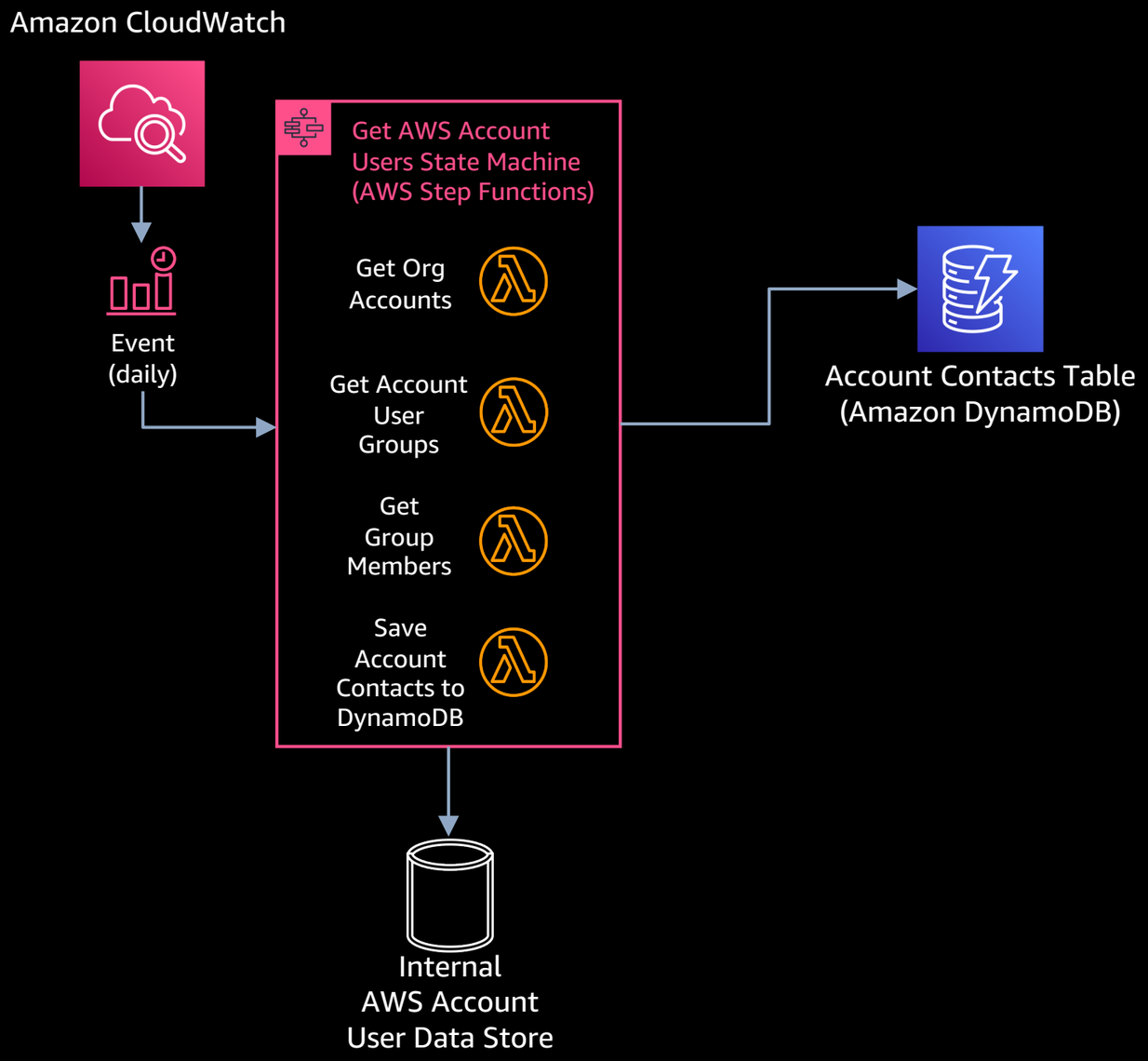




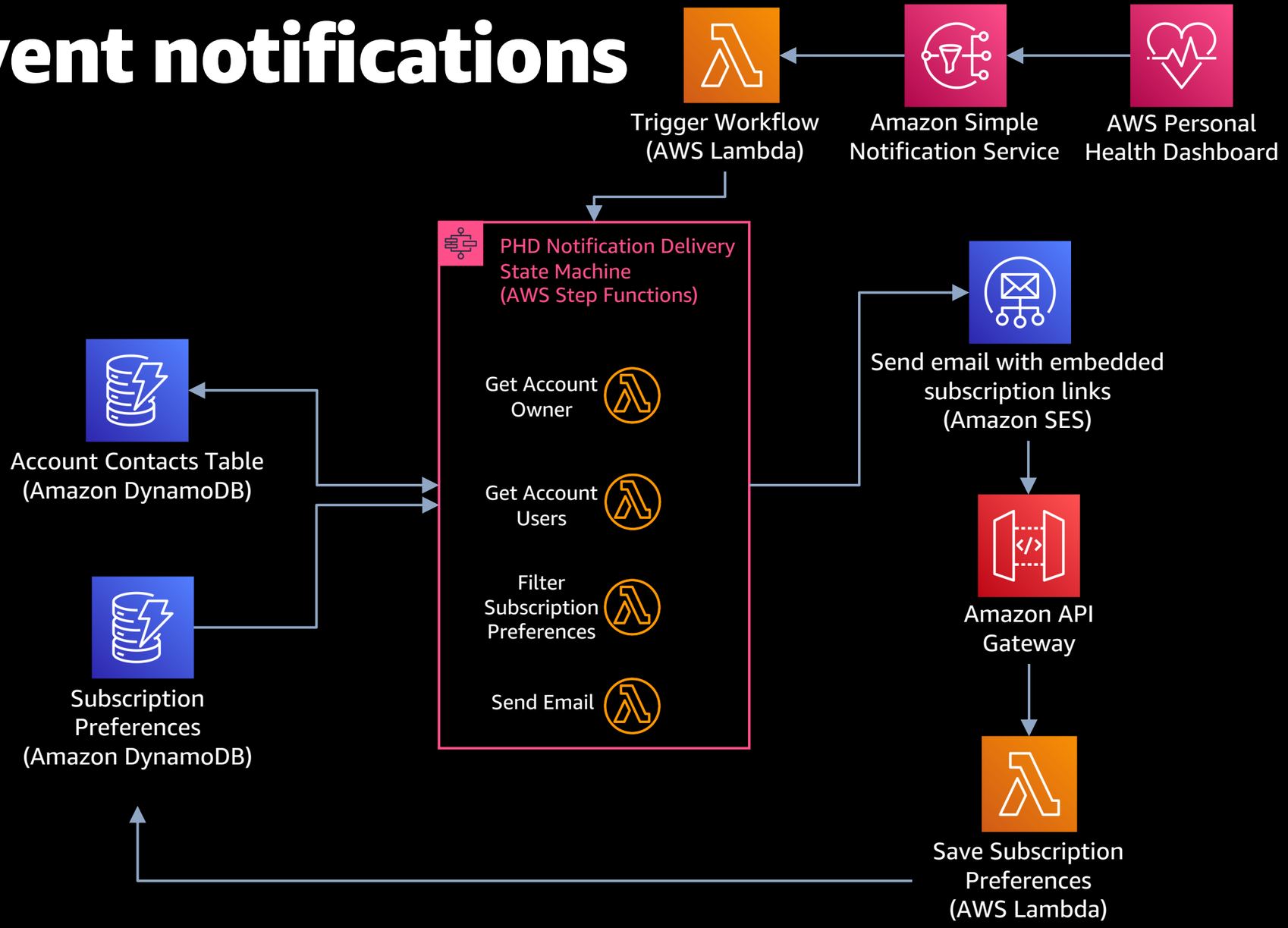
Push model – Event notifications



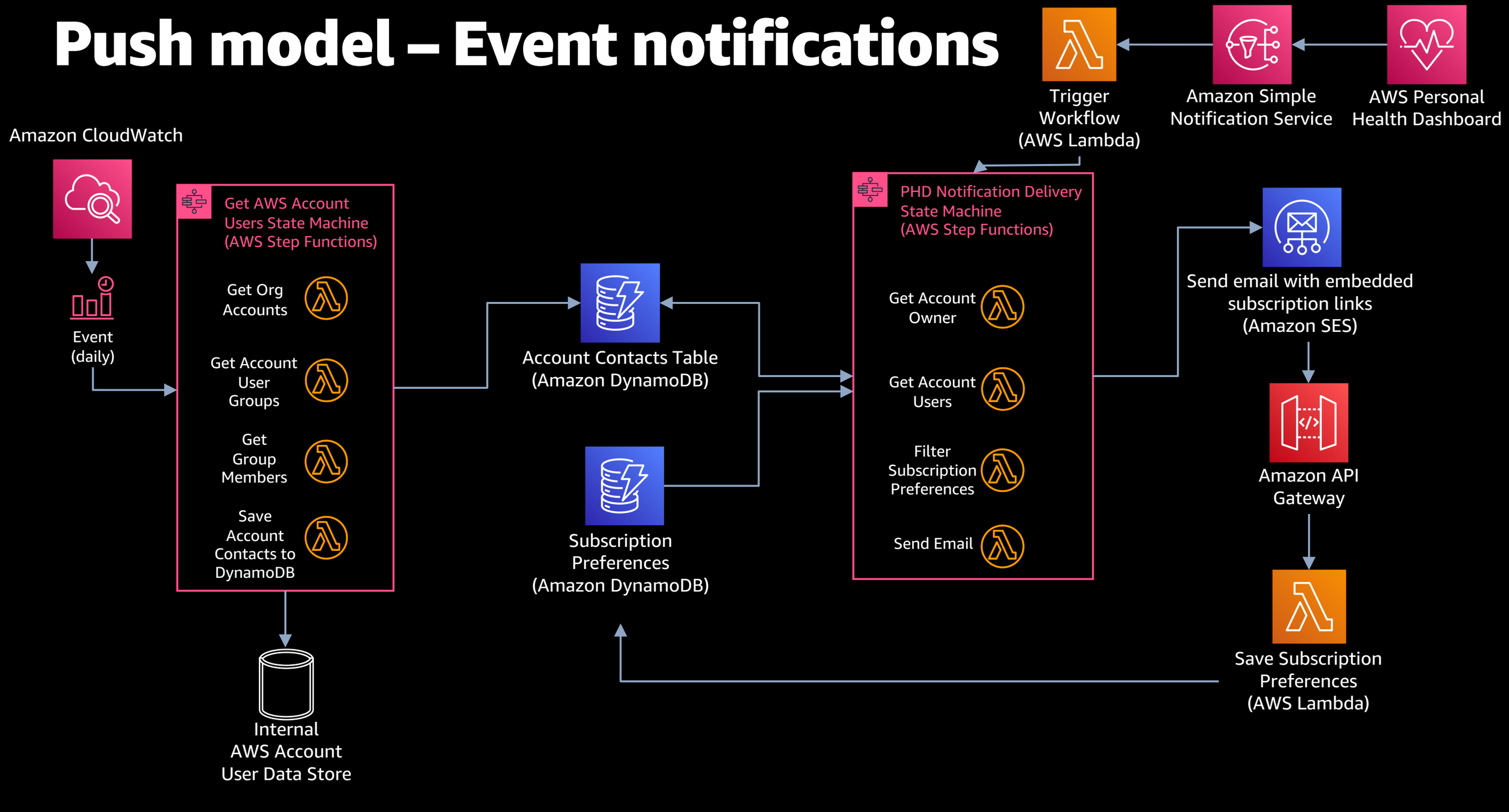
Push model – Event notifications



Push model – Event notifications



Push model – Event notifications



Scaled cloud operations backed by real-time data



AWS re:Invent

© 2020, Amazon Web Services, Inc. or its affiliates. All rights reserved.

3000+ health events/month

100+ maintenance events/month

150+ support cases/month

80+ service limit requests/month



© 2020, Amazon Web Services, Inc. or its affiliates. All rights reserved.

3000+ health events/month

100+ maintenance events/month

150+ support cases/month

80+ service limit requests/month

. . . across ~1000 accounts



© 2020, Amazon Web Services, Inc. or its affiliates. All rights reserved.

3000+ health events/month

100+ maintenance events/month

150+ support cases/month

80+ service limit requests/month

. . . across ~1000 accounts

. . . supported by 4 engineers



© 2020, Amazon Web Services, Inc. or its affiliates. All rights reserved.

New insights

"What's happening right now?"

"What upcoming maintenance events do I need to know about?"

"What service limit increases should we automate?"



© 2020, Amazon Web Services, Inc. or its affiliates. All rights reserved.

New insights

"Which events matter to me?"

"What are the critical issues affecting our infrastructure?"

"How quickly are we getting help on our support cases?"



© 2020, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Controls

BU
[ALL]

Environment
[ALL]

Cloud Operations Dashboard

Welcome to the Cloud Operations dashboard. This "open issues" view gives a snapshot of open support cases and health events. Use the filter controls at the top of this page to customise the view to a particular Business Unit and environment type (e.g. PRD). Use the other tabs in the dashboard to filter and drill down to create your own insights.

Support Cases Summary

There are currently a total of **87** open cases, of which there are **3** of **critical** severity, **6** of **urgent** severity, **12** of **normal** severity, **18** of **high** severity and **48** of **low** severity. Of these, 85 have been opened against PRODUCTION accounts.

Of the 87 open cases, 62 are currently in a pending-customer-action state, requiring information or action from Fidelity to advance or close the case.

Health Events Summary

There are currently a total of **217** active health events. Of these, 211 affect PRODUCTION accounts. There are 10 upcoming events that could impact resources in an account. See Health Events section below for details.

Note: "Active" events means the events are either currently in an "*open*" or "*upcoming*" status. See "Account Health Events" and "Service Events" tabs for full analysis options.

Open Support Cases

Open Cases (Critical or Urgent)

Case ID	Created	Category	Severity	BU	Account ID	Env	Status	Subject	Contacts

Key takeaways



Data-driven scale

Data is the key for successful operations at scale



Push and pull

Real-time events combined with data analytics make a powerful cloud operations solution



APIs

AWS APIs and events provide the data you need



Go serverless

Cloud-native and serverless create a low cost, simple cloud operations solution – fast

Thank you!



AWS re:Invent

© 2020, Amazon Web Services, Inc. or its affiliates. All rights reserved.



Please complete the session survey

AWS re:Invent

© 2020, Amazon Web Services, Inc. or its affiliates. All rights reserved.