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# Attribute-based contact routing in the hands of the business

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Many companies continue to struggle to **deliver delightful customer experiences (CX)** within their organisations



# Most contact centres don't have the right tools to provide exceptional CX

THE RESULT IS OFTEN WASTED TIME, WASTED EFFORT, AND DECREASED SATISFACTION



## CUSTOMER

- Unable to engage on channels of choice
- Ineffective self-service options
- Inconsistent, impersonal interactions
- Unnecessary complexity



## AGENT

- Tedious caller authentication
- Lack of real-time customer insights
- Disconnected, disparate systems and tools
- Inability to manage follow-up actions

# Amazon Connect

EASY-TO-USE, OMNICHANNEL, CLOUD-BASED CONTACT CENTRE

One application for workflows, routing, agent management, and experiences across all channels

Great customer and agent outcomes with AI/ML at the heart of every interaction



Dynamic, personal, and natural automated experiences



Built in real-time and historical analytics with secure, hassle-free access to your data



Scale from tens to tens of thousands of agents



Self-service configuration allows for instant innovation

## Pay only for what you use

# Inconsistent, impersonal interactions

## DATA MISMATCH



```
{  
  "FirstName": "Adrian",  
  "LastName": "Morgan",  
  "AccountNumber": "5555555",  
  "Age": "32",  
  "DateOfBirth": "12/02/1990",  
  "AddressLine1": "123 Smith Street",  
  "Suburb": "Carlton",  
  "State": "VIC",  
  "PostCode": "3053",  
  "Mobile": "0459555555",  
  "Balances":  
  {  
    "CurrentBalance": "120.50",  
    "OverdueBalance": "32.50"  
  },  
  "AccountFlags":  
  {  
    "LoyaltyStatus": "VIP",  
    "DaysCustomer": "957"  
  },  
  "TransientFlags":  
  {  
    "TechFault30Days": "true",  
    "OpenCase": "true",  
    "InAreaFailure": "false"  
  }  
}
```

# Customer Data as Attributes

## DATA MISMATCH

```
{  
    "FirstName": "Adrian",  
    "LastName": "Morgan",  
    "AccountNumber": "555555",  
    "Age": "32",  
    "DateOfBirth": "12/02/1990",  
    "AddressLine1": "123 Smith Street",  
    "Suburb": "Carlton",  
    "State": "VIC",  
    "PostCode": "3053",  
    "Mobile": "0459555555",  
    "Balances":  
    {  
        "CurrentBalance": "120.50",  
        "OverdueBalance": "32.50"  
    },  
    "AccountFlags":  
    {  
        "LoyaltyStatus": "VIP",  
        "DaysCustomer": "957"  
    },  
    "TransientFlags":  
    {  
        "TechFault30Days": "true",  
        "OpenCase": "true",  
        "InAreaFailure": "false"  
    }  
}
```

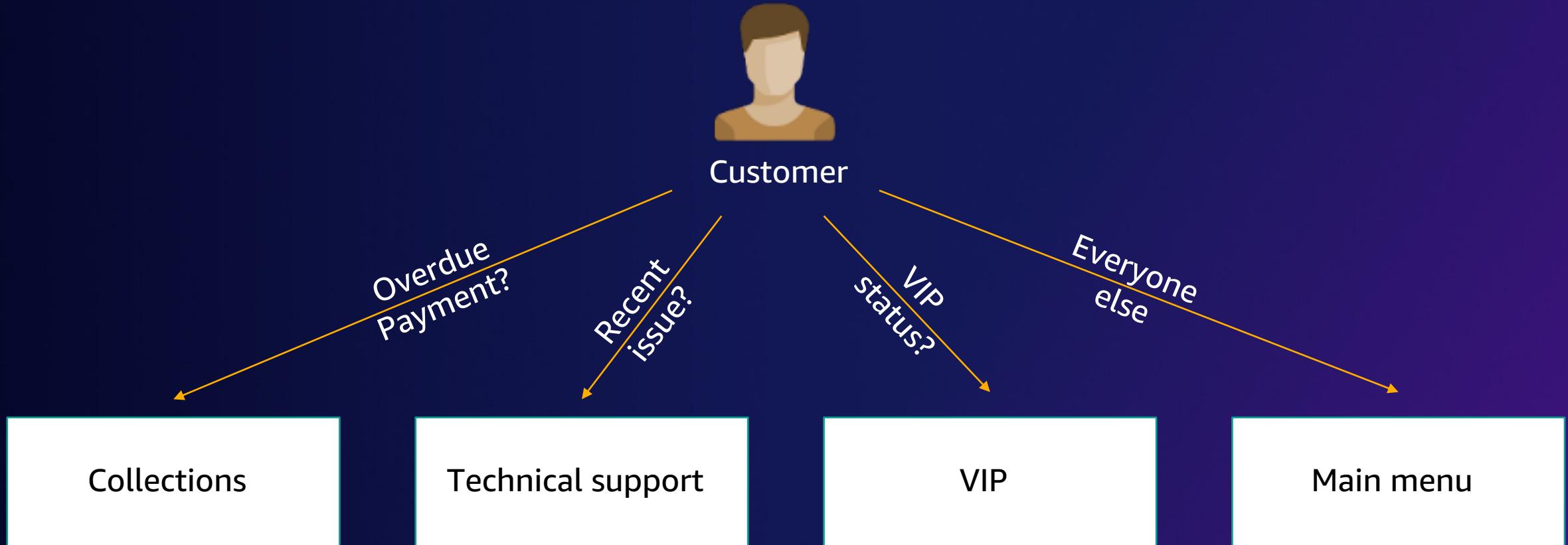
Collections? →

VIP? →

Technical fault? →

# How do we personalise customer experience?

REAL WORLD EXAMPLE



```
/**  
 * Handle an Amazon Connect contact event  
 * and determine the next action  
 */  
exports.handler = async(contactEvent, context) => {  
  try {  
    let vip = false;  
    let techFault30Days = false;  
    let overdueBalance = false;  
  
    if (contactEvent.Details && contactEvent.Details.ContactData && contactEvent.Details.ContactData.Attributes) {  
      var attributes = contactEvent.Details.ContactData.Attributes;  
      vip = attributes.LoyaltyStatus === 'VIP';  
      techFault30Days = attributes.TechFault30Days === 'true';  
      overdueBalance = (attributes.OverdueBalance !== undefined && +attributes.OverdueBalance > 0);  
    }  
  
    if (overdueBalance) {  
      return { nextAction: 'Collections' };  
    }  
    else if (techFault30Days) {  
      return { nextAction: 'TechnicalSupport' };  
    }  
    else if (vip) {  
      return { nextAction: 'VIP' };  
    }  
  
    return { nextAction: 'MainMenu' };  
  }  
  catch (error) {  
    console.error('Failed to determine next action', error);  
    return { nextAction: 'Error' };  
  }  
}
```

# Use a Lambda function to personalise experience

## Pros

- Easy to read
- Can be unit tested

## Cons

- Requires infrastructure change to modify
- Logic is not accessible to business

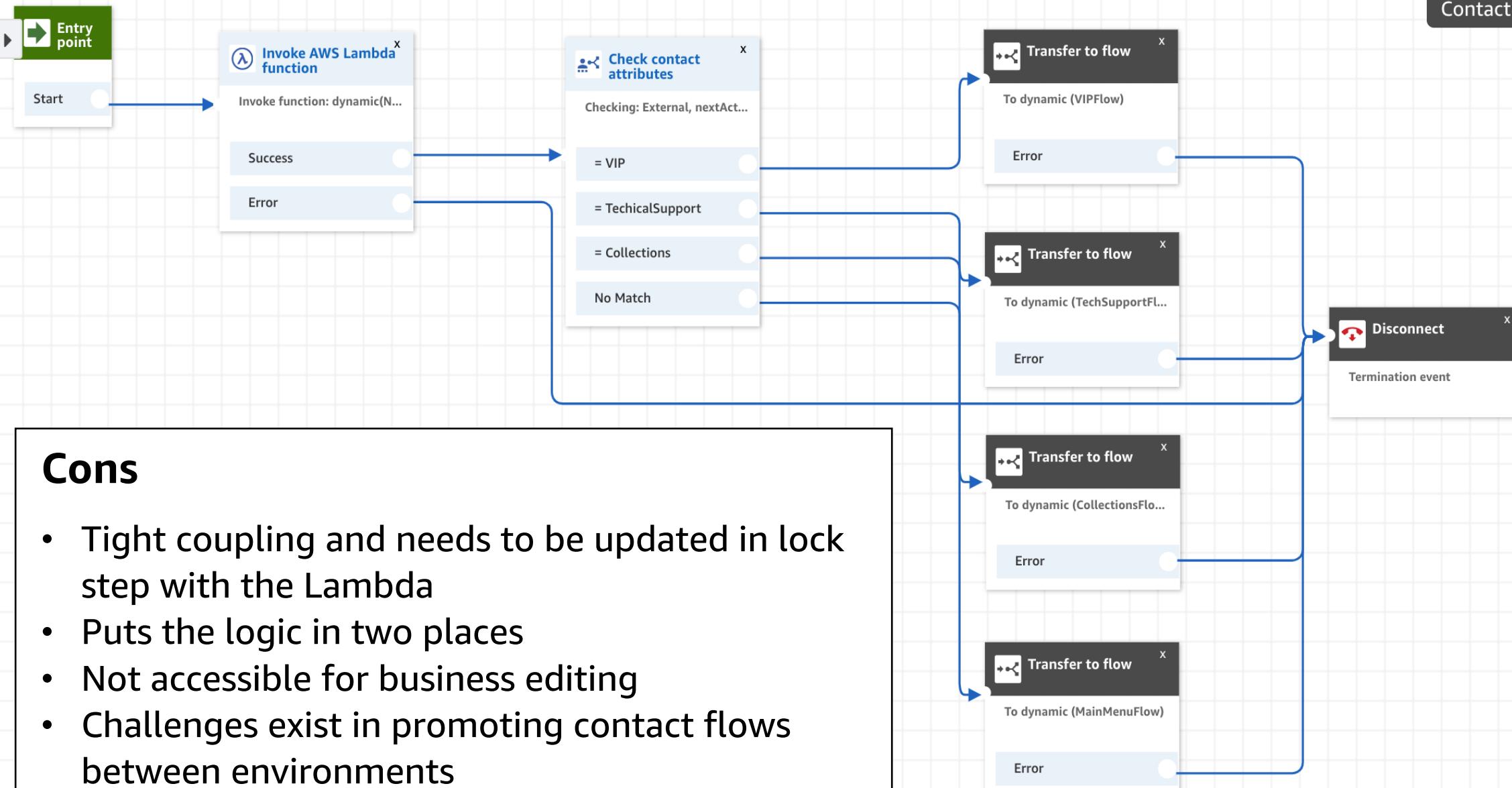
# Contact flow behind Lambda

Latest: Published

Publish

Save

Contact flow (inbound)



# Contact flow only approach

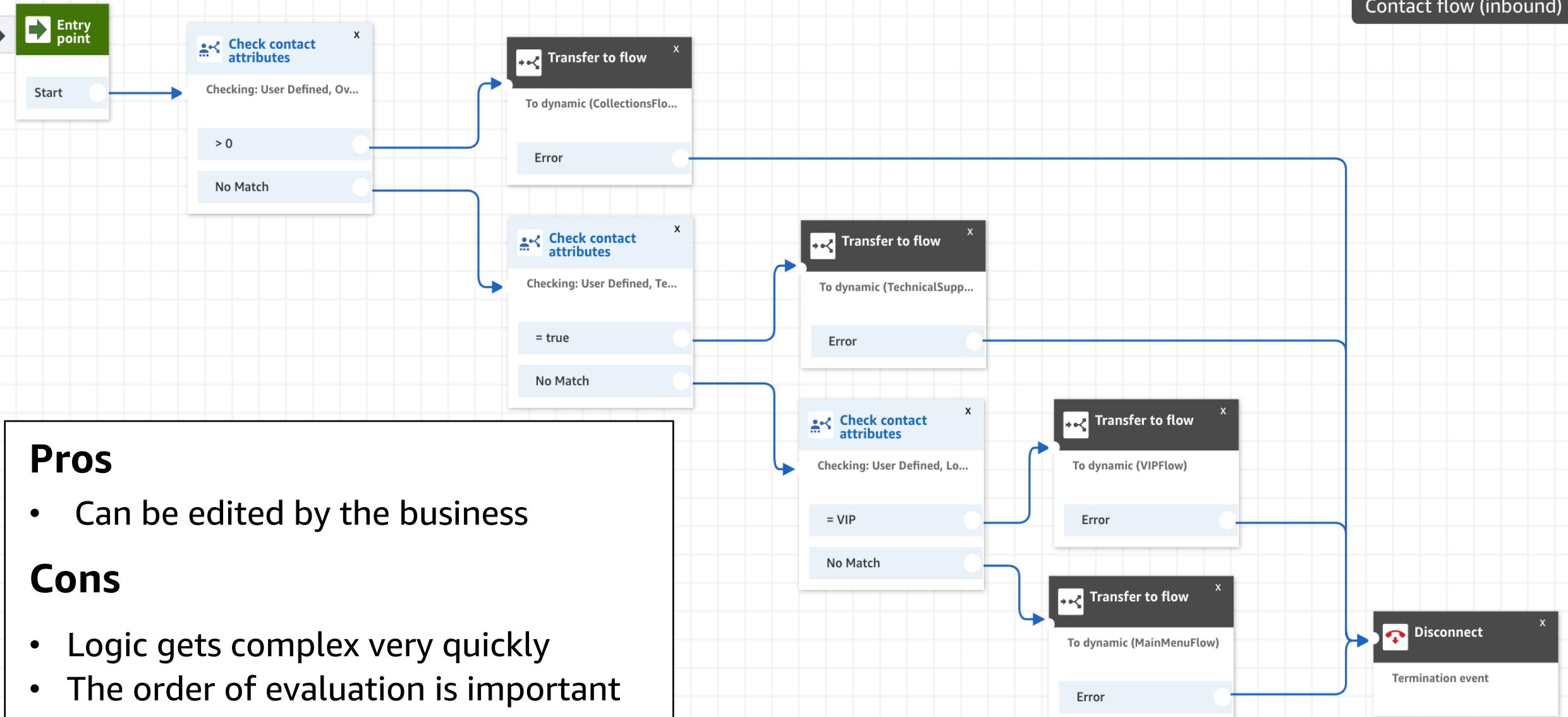
Latest: Published

Publish

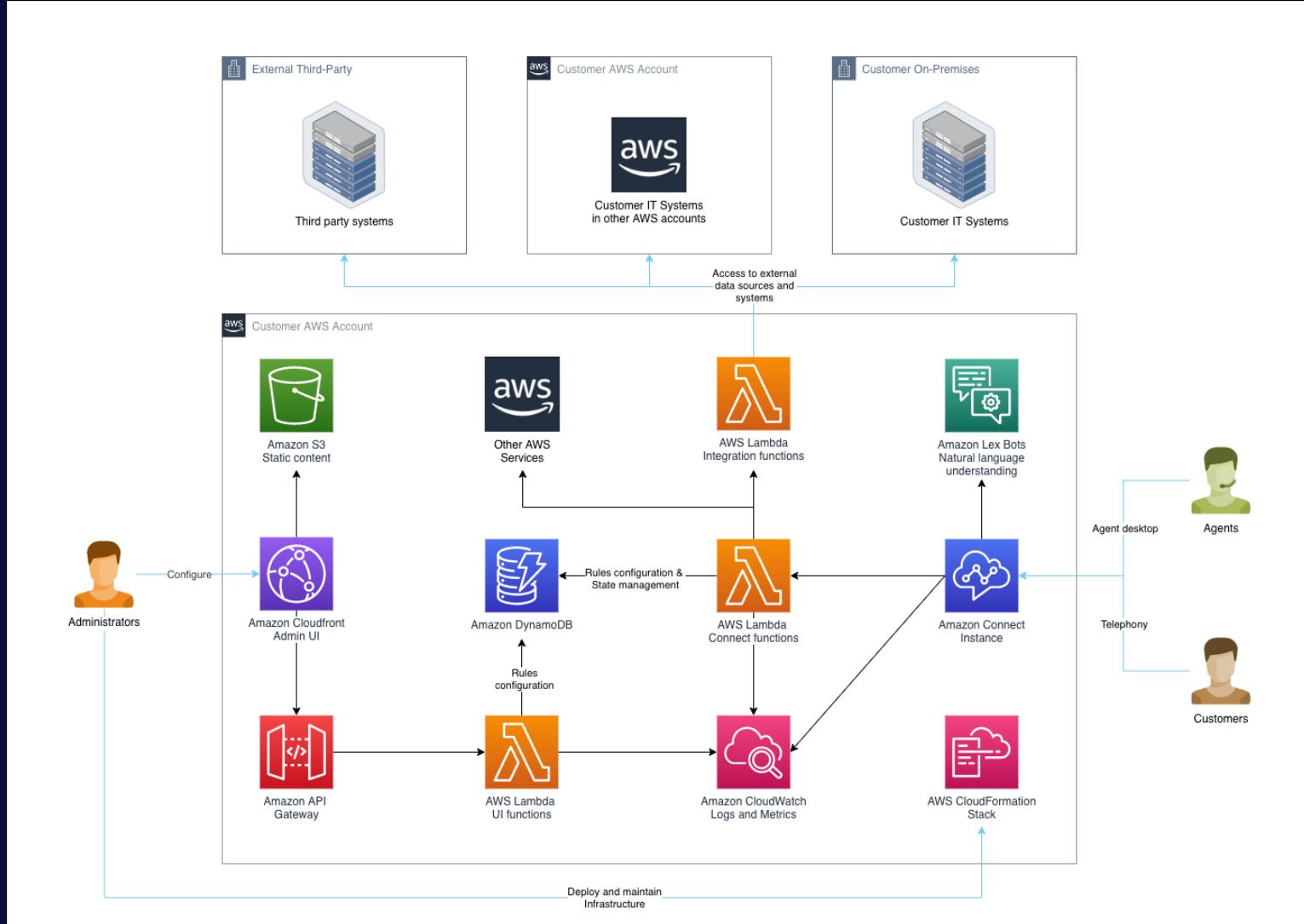
Save



Contact flow (inbound)



# Rules Engine – easily personalise your IVR





# Amazon Connect - Rules Engine

This system provides a user interface and APIs to control a routing engine based on customer and system attributes.

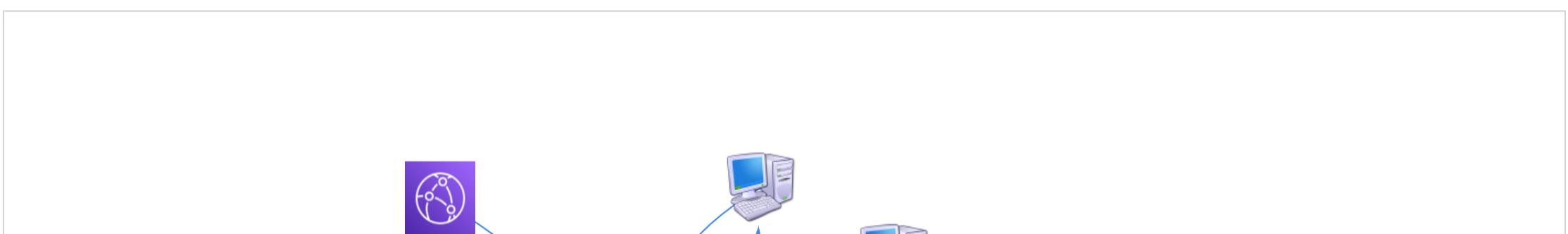
It is powered by AWS Lambda functions and Amazon DynamoDB to provide powerful dynamic routing capabilities based on customer attributes to your contact center.

Rule sets can be associated with an inbound phone number and these control the user experience, optionally linked to other rule sets.

Version: 2.4.6 (Batch enhancements)

## Architecture

The following architecture describes how the Amazon Connect Rules Engine interacts with Amazon Connect, customer and third-party systems and other AWS services. Click on components and connections to see more detail.



## Create an end point

X

Enable this end point

End point name \*

AWS Summit 2022

The end point name is used to refer to this end point from rule sets and must contain only simple characters

End point description

AWS Summit 2022 end point

Enter a description for this end point (optional)

Cancel

Create end point

## Create a rule set



Rule set name \*

Enter a name for this rule set

Folder location \*

Enter a folder for this rule set

Enable this rule set

Rule set description

Enter a description for this rule set (optional)

End points for this rule set

AWS Summit 2022

Remove

Claim end point

Cancel

Create rule set

# Rule set: Routing demo

Rules allow you match incoming customer and system attributes to select personalised experiences for customers. Rules that match are sorted by descending priority, higher priority rules are invoked before lower priority rules.

The screenshot shows the AWS Rule Set interface for the 'Routing demo' rule set. At the top, there is a navigation bar with buttons for 'Back', 'Create rule' (which is highlighted with a red box), 'Edit rule set', 'Rename ruleset', and 'Clone ruleset'. Below the navigation bar is a breadcrumb trail: 'Rule sets > AWS Summit 2022 > Routing demo'. On the left, there are filtering options: 'Show 100 entries' and a 'Search:' input field. The main area displays a table header with columns: Priority, Rule name, Description, Type, Activation, and Weights. A message 'No rules are currently configured' is centered in the table body. At the bottom, it says 'Showing 0 to 0 of 0 entries' and has 'Previous' and 'Next' navigation links.

Priority	Rule name	Description	Type	Activation	Weights
No rules are currently configured					

Show 100 entries      Search:

Priority Rule name Description Type Activation Weights

No rules are currently configured

Showing 0 to 0 of 0 entries      Previous      Next

## Rule set: Routing demo - Create a rule

X

Rule name \*

Set up customer

Enter a name for this rule

Enable this rule

Rule description

Sets up a customer record

Enter a description for this rule (optional)

Rule priority \*

1000

Enter a priority for this rule

Activation threshold \*

0

Enter an activation value for this rule

Rule type \*

UpdateState

Pick a rule type to determine the output action

The UpdateState rule updates or removes the state for the provided key in DynamoDB, allowing progress tracking and state modification during a call. If the value is set to *increment* this will increment the value (useful for counting looping etc).

State key \*

Customer

Enter the key for the state you want to set

State value

```
{  
    "FirstName": "Adrian",  
    "LastName": "Morgan",  
    "AccountNumber": "5555555",  
}
```

Enter a value (as a template) or leave blank to remove this state. Enter *increment* as the value to add one to this state value.

Cancel

Create rule



# Rule set: Routing demo

Rules allow you match incoming customer and system attributes to select personalised experiences for customers. Rules that match are sorted by descending priority, higher priority rules are invoked before lower priority rules.

[Back](#)[Create rule](#)[Edit rule set](#)[Rename ruleset](#)[Clone ruleset](#)

[Rule sets](#)>AWS Summit 2022>Routing demo

Show 100 entriesSearch:

Priority	Rule name	Description	Type	Activation	Weights	
1000	Set up customer	Sets up a customer record	UpdateState	0	0	

Showing 1 to 1 of 1 entries

Previous1Next

## Rule set: Routing demo - Create a rule

X

Rule name \*

Customers in collections

Enter a name for this rule

Enable this rule

Rule description

Customers in collections

Enter a description for this rule (optional)

Rule priority \*

900

Enter a priority for this rule

Activation threshold \*

100

Enter an activation value for this rule

Rule type \*

RuleSet



Pick a rule type to determine the output action

Transfers the customer to another rule set.

Ruleset name \*

Collections menu



Select the rule set to transfer the customer to

Optional message

Optional customer message



Enter an optional message to play to the customer before rule set transfer.



# Rule set: Routing demo / Rule: Customers in collections

Configure your rule by adjusting priority and activation and tuning weights.

[Back](#)[Create weight](#)[Rename rule](#)[Save rule](#)[Clone rule](#)[Rule sets](#)[AWS Summit 2022](#)[Routing demo](#)[Customers in collections](#)

Show 25 entries

Search:

Field	Operation	Value	Weight
No weights are currently configured			

Showing 0 to 0 of 0 entries

[Previous](#) [Next](#)

Enable this rule

Rule description

Customers in collections

## Create a weight



Field name \*

Enter the field to operate on

Operation type \*



Pick a weight operation

Value

Enter the value to compare

Weight

Enter the weight to use when the operation succeeds

Cancel

Create weight

# Rule set: Routing demo / Rule: Customers in collections

Configure your rule by adjusting priority and activation and tuning weights.

[Back](#)[Create weight](#)[Rename rule](#)[Save rule](#)[Clone rule](#)

Rule sets

AWS Summit 2022

Routing demo

Customers in collections

Show 25 entries

Search:

Field	Operation	Value	Weight		
Customer.Balances.OverdueBalance	greaterthan	0	100		

Showing 1 to 1 of 1 entries

Previous

1

Next

 Enable this rule

Rule description

Customers in collections

# Rule set: Routing demo / Rule: Customer technical fault 30 days

Configure your rule by adjusting priority and activation and tuning weights.

[Back](#)  [Create weight](#)  [Rename rule](#)  [Save rule](#)  [Clone rule](#)

Rule sets > AWS Summit 2022 > Routing demo > Customer technical fault 30 days

Show  entries Search:

Field	Operation	Value	Weight	
Customer.TransientFlags.TechFault30Days	equals	true	100	

Showing 1 to 1 of 1 entries

Previous  Next

Enable this rule

Rule description

The customer has had a technical fault in the past 30 days

# Rule set: Routing demo

Rules allow you match incoming customer and system attributes to select personalised experiences for customers. Rules that match are sorted by descending priority, higher priority rules are invoked before lower priority rules.

[Back](#) [Create rule](#) [Edit rule set](#) [Rename ruleset](#) [Clone ruleset](#)

Rule sets > AWS Summit 2022 > Routing demo

Show 100 entriesSearch:

Priority	Rule name	Type	Activation	Weights			
1000	Set up customer	UpdateState	0	0	<span style="color: green;">✓</span>	<span style="color: blue;">⚙️</span>	<span style="color: red;">✖️</span>
900	Customers in collections	RuleSet	100	1	<span style="color: green;">✓</span>	<span style="color: blue;">⚙️</span>	<span style="color: red;">✖️</span>
800	Customer technical fault 30 days	RuleSet	100	1	<span style="color: green;">✓</span>	<span style="color: blue;">⚙️</span>	<span style="color: red;">✖️</span>
700	VIP customer	RuleSet	100	1	<span style="color: green;">✓</span>	<span style="color: blue;">⚙️</span>	<span style="color: red;">✖️</span>
0	Default main menu	RuleSet	0	0	<span style="color: green;">✓</span>	<span style="color: blue;">⚙️</span>	<span style="color: red;">✖️</span>

Showing 1 to 5 of 5 entriesPrevious1Next

# Configure rule sets

Rule sets represent a modular set of customer interactions with Amazon Connect. Rule sets can be associated with one or more Amazon Connect inbound phone numbers or linked to from another rule set. Rule sets can be organised into folders, move them into folders to group associated rule sets for your experiences.

Show all children

◀ Rule sets

AWS Summit 2022

▶ Experiments  
▶ Partners  
▶ Verticals

Show 25 entries

Create rule set

Import rule sets

Actions ▾

Rule sets ➔ AWS Summit 2022

Search:

Rule set name	End points	Description	Folder			
<input type="checkbox"/> Collections menu	None	Collections menu	/AWS Summit 2022			
<input type="checkbox"/> Main menu	None	Main menu	/AWS Summit 2022			
<input type="checkbox"/> Routing demo	AWS Summit 2022	A rule set demonstrating routing based o...	/AWS Summit 2022			
<input type="checkbox"/> Technical support menu	None	Technical support menu	/AWS Summit 2022			
<input type="checkbox"/> VIP customers	None	VIP customers menu	/AWS Summit 2022			

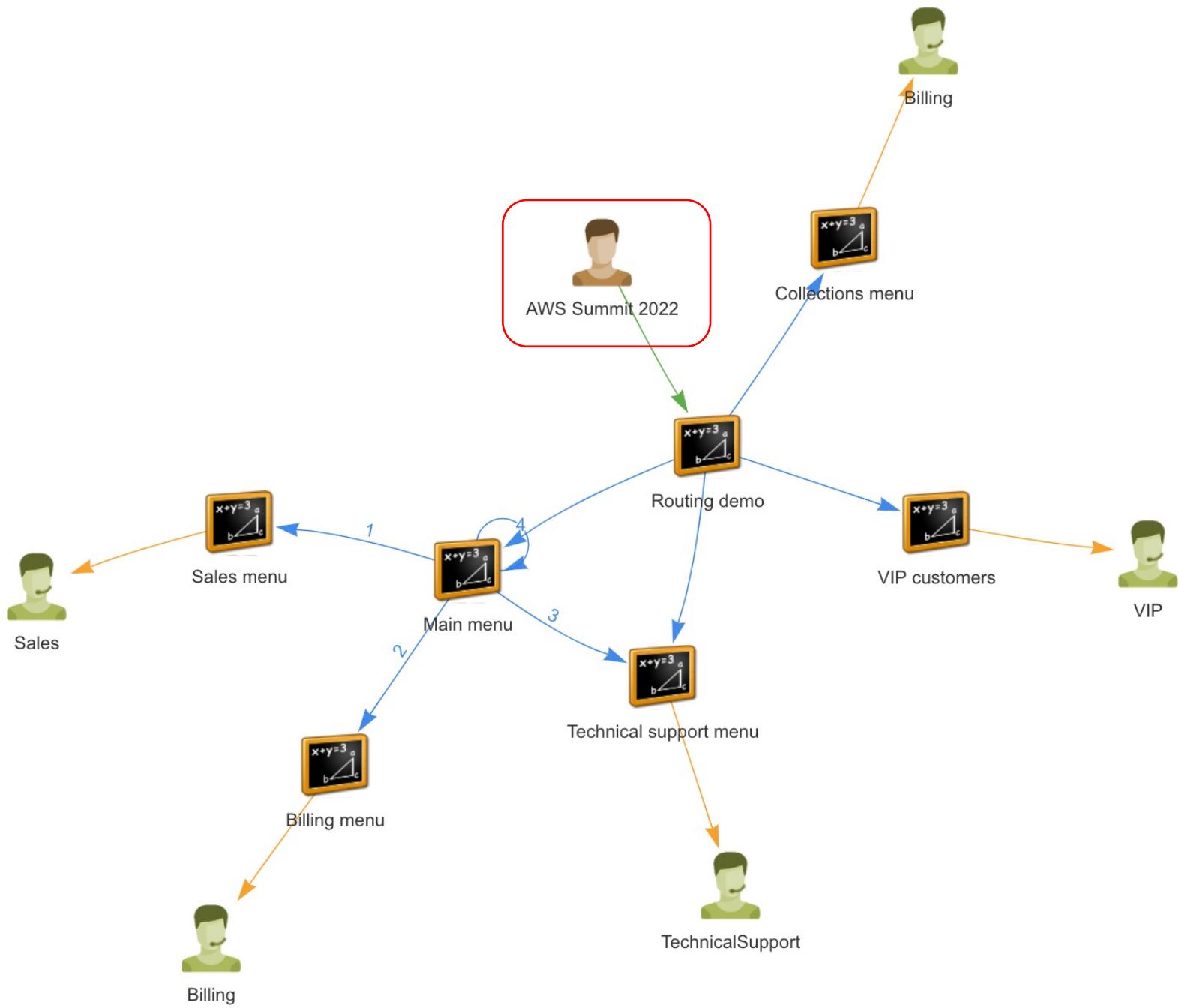
Showing 1 to 5 of 5 entries

Previous

1

Next





[New interaction](#)[Journey](#) [Configure](#) [Debug](#) [State](#) [Script](#)

## New interaction



Select an end point \*

AWS Summit 2022



Your phone number or anonymous \*

+61422529062

Interaction date and time (Australia/Melbourne) \*

22/03/2022, 01:53 pm

[Cancel](#)[Start interaction](#)

[New interaction](#)[Journey](#) [Configure](#) [Debug](#) [State](#) [Script](#)

Rules Engine

We record all calls for coaching and quality purposes.

Queue

Entered queue: Billing

Rules Engine

Terminate (remote)

Enter message, press enter

NOINPUT

NOMATCH

Create test

Rule #1

Ruleset: Routing demo  
Rule: Set up customer  
Type: UpdateState

Rule #2

Ruleset: Routing demo  
Rule: Customers in collections  
Type: RuleSet

Rule #3

Ruleset: Collections menu  
Rule: Collections queue  
Type: Queue



New interaction

Rules Engine

We record all calls for coaching and quality purposes.

Queue

Entered queue: Billing

Rules Engine

Terminate (remote)

Enter message, press enter

NOINPUT

NOMATCH

Journey Configure Debug State Script

```
"CurrentRule_unstaffedQueueTransfer": "true",
"Customer": {
    "FirstName": "Adrian",
    "LastName": "Morgan",
    "AccountNumber": "555555",
    "Age": "32",
    "DateOfBirth": "12/02/1990",
    "AddressLine1": "123 Smith Street",
    "Suburb": "Carlton",
    "State": "VIC",
    "PostCode": "3053",
    "Mobile": "0459555555",
    "Balances": {
        "CurrentBalance": "120.50",
        "OverdueBalance": "32.50"
    },
    "AccountFlags": {
        "LoyaltyStatus": "VIP",
        "DaysCustomer": "957"
    },
    "TransientFlags": {
        "TechFault30Days": "true",
        "OpenCase": "true",
        "InAreaFailure": "false"
    }
},
"CustomerPhoneNumber": "+61422529055",
```

Create test

[New interaction](#)[Journey](#) [Configure](#) [Debug](#) [State](#) [Script](#)

Rules Engine

We record all calls for coaching and quality purposes.

Queue

Entered queue: Billing

Rules Engine

Terminate (remote)

```
message: "We record all calls for coaching and quality purposes\\."
queue: "Billing"
```

[NOINPUT](#)[NOMATCH](#)[Create test](#)

Create a test ×

Test name \*

Summit test VIP

Test names should contain only upper and lowercase characters

Test folder \*

/AWS Summit 2020

Enter a folder to store this test in (starting with /)

Test reference code

SUMMIT-001

Enter an optional test reference code

Test description

Test interaction to AWS Summit 2022 from +61422529055

Enter an optional description for your test

End point \*

AWS Summit 2022

Enter an end point to connect to



## Test customer experience

Tests provide the ability to assert outcomes for rule and rule set changes on customer experience. Logic changes can be made safely, asserting the expected outcome for a range of customer scenarios and profiles.

Show all children



AWS Summit 202

Create a test

Actions ▾

Tests \*

Show 25 entries

Search:

Test name	Reference	Description	Folder	
<input type="checkbox"/> Summit test VIP	SUMMIT-001	Test interaction to AWS Summit 2022 from...	/AWS Summit 2020	  

Showing 1 to 1 of 1 entries

Previous

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Next

[« Tests](#)[◀ Batch results](#)

jospas@amazon.com

22/03/2022 01:01pm

COMPLETE with 1 test(s)

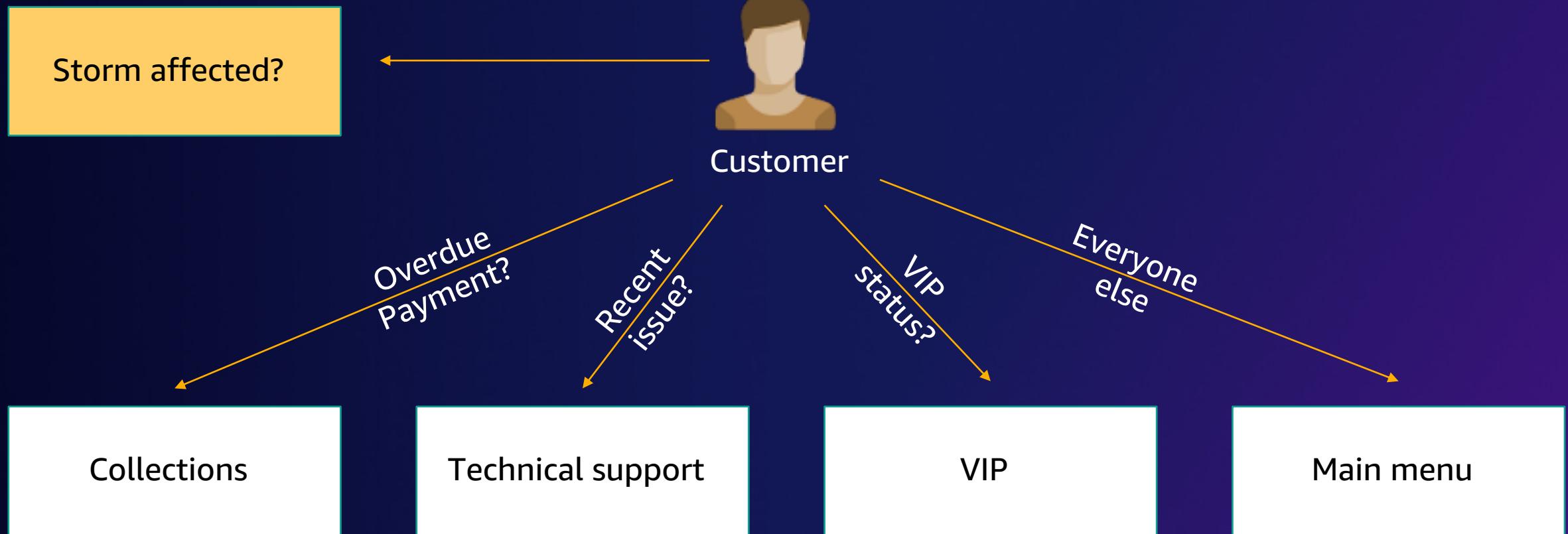
Success

Warning

Error

Test name	Test steps	Status
Summit test VIP	▶ 🔍	SUCCESS
Type: message	We record all calls for coaching and quality purposes\.	SUCCESS
Matched message: We record all calls for coaching and quality purposes.		INFO
Type: queue	Billing	SUCCESS
Matched queue: Billing		INFO

# what about a more complex example?



# Create a customised message for storm affected customers

## Rule set: Routing demo - Create a rule

Rule name \*

Storm affected customers

Enter a name for this rule

Enable this rule

Rule description

Storm affected customers

Enter a description for this rule (optional)

Rule priority \*

950

Enter a priority for this rule

Activation threshold \*

100

Enter an activation value for this rule

Rule type \*

Message

Pick a rule type to determine the output action

The message rule simply plays a message to the customer and proceeds to the next rule.

Message \*

We recognise that you have likely been affected by recent storm activity in {{Customer.Suburb}} and wanted you to know we have credited your account for the next three months so that is one less thing you need to worry about.

Enter the message to play to the customer

Cancel

Create rule





## Rule set: Routing demo / Rule: Storm affected customers

Configure your rule by adjusting priority and activation and tuning weights.

 [Back](#)[Create weight](#)[Rename rule](#)[Save rule](#)[Clone rule](#)

[Rule sets](#) > [AWS Summit 2022](#) > [Routing demo](#) > **Storm affected customers**

Show 25 entries

Search:

Field	Operation	Value	Weight		
Customer.PostCode	greaterthan	3050	50		
Customer.PostCode	lessthan	3060	50		

Showing 1 to 2 of 2 entries

Previous

1

Next

Enable this rule

Rule description

Storm affected customers

[New interaction](#)[Journey](#) [Configure](#) [Debug](#) [State](#) [Script](#)

## Rules Engine

We recognise that you have likely been affected by recent storm activity in Carlton and wanted you to know we have credited your account for the next three months so that is one less thing you need to worry about.

## Rules Engine

We record all calls for coaching and quality purposes.

## Queue

Entered queue: Billing

## Rules Engine

Terminate (remote)

Enter message, press enter

NOINPUT

NOMATCH

Create test

## Rule #1

Ruleset: Routing demo  
Rule: Test  
Type: SetAttributes

## Rule #2

Ruleset: Routing demo  
Rule: Set up customer  
Type: UpdateState

## Rule #3

Ruleset: Routing demo  
Rule: Storm affected customers  
Type: Message

## Rule #4

Ruleset: Routing demo  
Rule: Customers in collections  
Type: RuleSet

## Rule #5

Ruleset: Collections menu  
Rule: Collections queue  
Type: Queue

# Wrap up

Amazon Connect offers flexibility

# Thank you!

**Adrian Morgan (he/him)**  
Manager, Prod Apps  
Specialist Solutions  
Architect, ANZ , AWS

**Josh Passenger (he/him)**  
Connect Specialist Solutions  
Architect, ANZ, AWS



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