Always-On Outbound Customer Engagement

STUDENT GUIDE

PEGA® Academy

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Essentials of always on outbound

Description

Learn about the principles of always-on outbound customer engagement and its similarities and differences with traditional outbound marketing. Gain an overview of how the brain works in outbound customer engagement. Study a typical always-on outbound business scenario.

Learning objectives

- Describe the principals of always-on 1:1 customer engagement
- Compare and contrast traditional marketing concepts with always-on outbound
- Describe a typical always-on business use case in the outbound channel

Working of the always-on brain in outbound

What do customers expect from business?

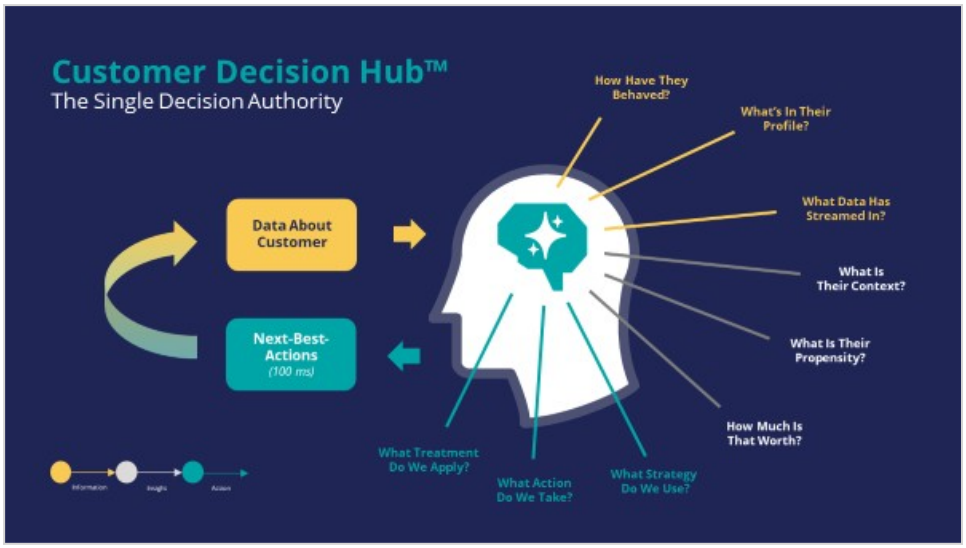
Customers are more empowered than ever before. As a result, they have very high expectations of the experiences they receive from their service providers. These experiences must be meaningful, consistent, and personalized across every channel they interact with.

In alignment with customer expectations, Pega Customer Decision Hub™ is designed to deliver the right message, to the right customer, at the right time, on the right channel.

This approach not only provides a better experience for customers, it also helps the business improve its customer relationships over the long term.

The always-on brain

Pega Customer Decision Hub is the “always-on brain” that acts as a single, centralized decision authority.



The always-on brain carries out 1:1 customer engagement across channels.

“Always-on” means that the brain constantly monitors each customer’s context across channels. When it detects a need, it selects and delivers the appropriate offer, retention message, or service recommendation in the customer’s preferred channel.

The brain uses data about the customer, including past behaviour, profile information, and contextual data that may, for example, stream from their device, as input. It leverages advanced AI techniques to predict customer context, propensities, and relevance. It also uses stored decision strategies to trigger messages and actions at the moment the customer will be most receptive to them. As a centralized resource, the brain enables you to deliver consistent and personalized Next-Best-Actions across all channels.

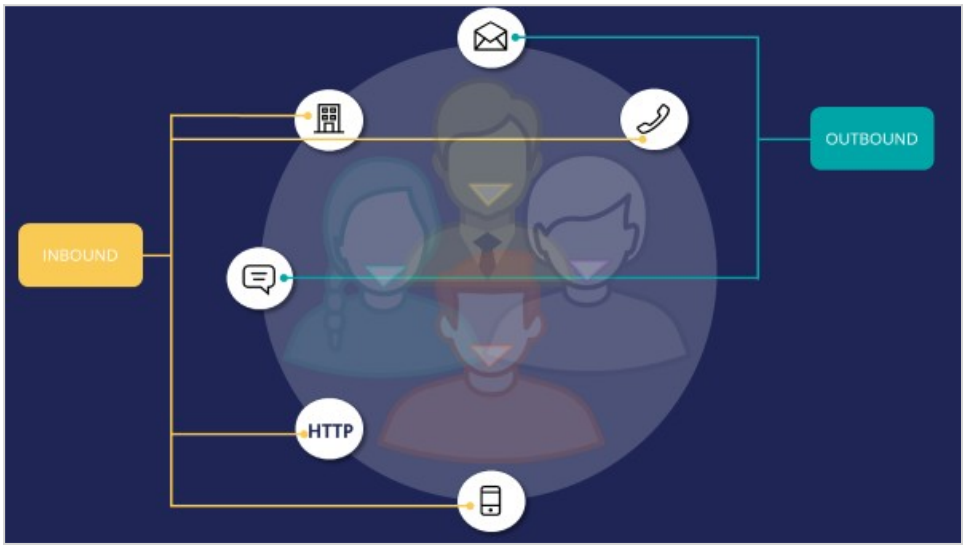
Customer engagement channels

Customer interactions take place on various channels, which can be broadly classified as “owned” and “paid”.

Owned channels are the channels owned by the business, such as a self-service web portal, contact center, or mobile application. In these channels the business has more control over customer engagement activities.

Paid channels are owned by a third party, for example social media platforms such as Google and Facebook. Businesses have to pay to use these channels for customer engagement activities.

Owned channels can be further classified as inbound and outbound channels.



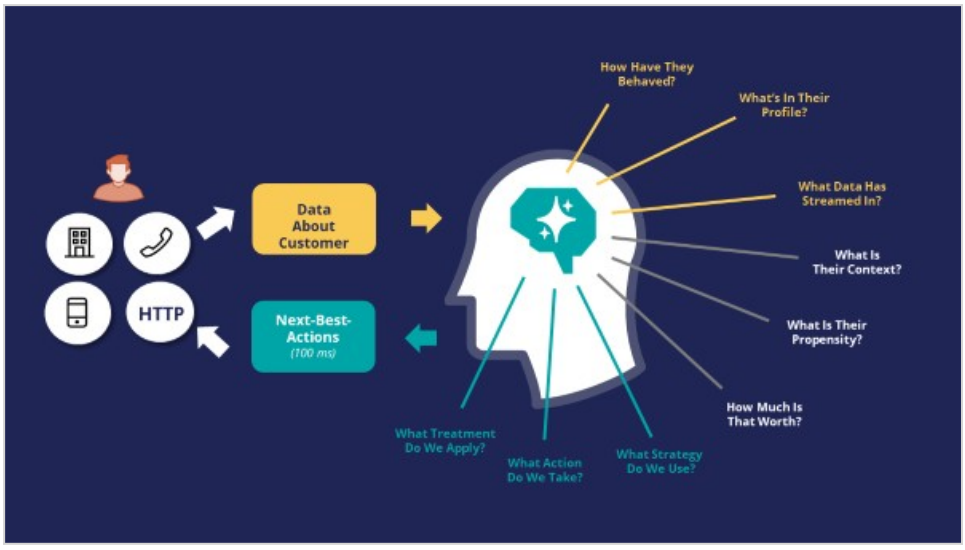
An inbound channel is used when a customer approaches the business, via, for example, a self-service web portal.

An outbound channel is used by the business to send a message to the customer, via, for example, email or SMS.

The flow of information and the mechanics of delivering Next-Best-Actions is different in inbound and outbound channels.

Inbound interactions

When a customer interaction takes place on an inbound channel, the channel identifies the customer, then the brain evaluates the Next-Best-Action for that customer and sends the result back to the same channel, in real-time. The customer's response to the action is recorded by the system, and the cycle repeats.



Outbound interactions

Always-on outbound means that the brain sends outbound messages, via email or SMS, to customers only when it's appropriate.

There are two types of outbound interactions: always-on actions and one-time actions.

Always-on actions

Always-on actions are typically the actions that are available for the Next-Best Action framework (Always-on brain) to select and deliver the appropriate communication to the customer.

This can happen in three ways:

a. Promotional actions (Default): The brain is configured to proactively send out messages on a scheduled basis when relevant. It evaluates the Next-Best-Action for each customer identified in a segment, which contains the potential list of customers to whom you want to send messages. In most cases, customer responses arrive after the message has been sent. When customers respond, the responses are recorded in the system and used to evaluate the next-best action. The always-on

brain considers all the engagement policy conditions, applies arbitration, outbound action/channel limits, and contact policies while determining the appropriate action and it delivers the top-ranked action. Promotional actions are the default method of communication.

b. Transactional actions: When a customer event is detected that is significant to the business, for example, a customer abruptly ends an online transaction, Customer Decision Hub receives the data from the event stream. The brain then evaluates the next-best action and sends the resulting action, such as a notification email with a link to continue the incomplete transaction, to the customer. In this case, the system triggers the outbound message only for the customer for whom the event occurred. Transactional actions are regulated by engagement policies, arbitration factors, action limits, and contact policies. However, the outbound channel limits are disregarded, as long as it is one of the qualified actions.

c. Mandatory actions: In certain situations, it might be necessary to inform certain customers about changes such as an increase in interest rates or network outages. These types of communications are referred to as mandatory actions, that must be sent out promptly. These actions are regulated by engagement policies and contact policies. Arbitration, outbound channel limits, and outbound action limits do not apply to these actions. However, contact policies are still applied to these actions to ensure the same actions are not delivered repeatedly.

Here's an illustration of which policies and constraints apply to different outbound interactions.

		Eligibility/ Applicability/ Suitability conditions	Arbitration	Outbound channel limits	Outbound action limits	Contact policies
Always-On actions	Promotional (Default) actions)	✓	✓	✓	✓	✓
	Transactional actions	✓	✓	✗	✓	✓
	Mandatory actions	✓	✗	✗	✗	✓

One-time actions

One-time actions are typical batch communication that all or a subset of customers receive at a specific date and time. These actions are executed in a Business Operations Environment. No engagement policies or constraints are applied to these actions, and everyone receives the same action.

a. One-time communication: In exceptional circumstances such as a planned maintenance activity in certain areas, you want to contact all or a subset of your customers outside of the regularly scheduled updates. In such cases, you can initiate a one-time communication, which does not coordinate with the outbound schedule. This type of communication typically applies to urgent or time-sensitive matters and does not repeat automatically.

		Eligibility/ Applicability/ Suitability conditions	Arbitration	Outbound channel limits	Outbound action limits	Contact policies
Always-On actions	Promotional (Default) actions)	✓	✓	✓	✓	✓
	Transactional actions	✓	✓	✗	✓	✓
	Mandatory actions	✓	✗	✗	✗	✓
One-time actions	One-time actions	✗	✗	✗	✗	✗

Traditional marketing versus always-on outbound

Overview

As more organizations switch from traditional marketing approaches to 1:1 customer engagement, there is a need to compare and contrast the terminologies used in the two approaches.

Here are some key terminologies and concepts used in traditional marketing, translated into concepts in the always-on, Next-Best-Action approach.

Marketing campaigns and programs

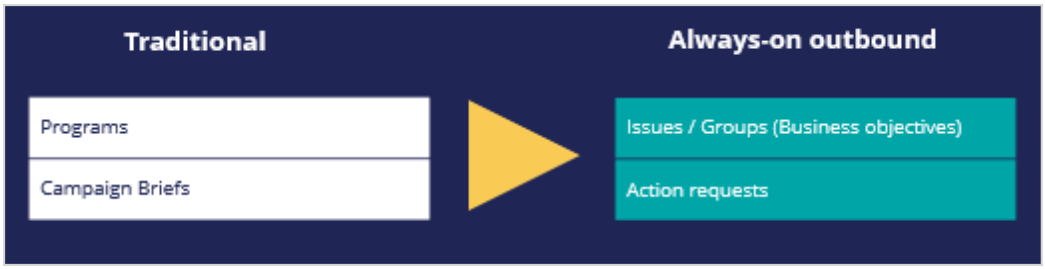
In traditional marketing, a marketing program is a set of activities designed to meet marketing objectives by grouping campaigns into logical business outcomes.

In the always-on approach, marketing programs translate into hierarchies of **Issues** and **Groups**. You can use your existing marketing objectives and desired outcomes to define the Issue/Group hierarchies that best meet your needs.

For example, a marketing program could be designed to address the business objective of decreasing dormancy in credit card usage. In this case, you would design a series of marketing campaigns that target infrequent credit card users, encouraging them to use their cards with various offers such as additional bonus points or discounts. In the always-on approach, this translates into defining the Issue as, in this case, *Dormancy*, and the Group as *Promotions*. Under this group, you would then create actions called *10% additional bonus points,* or *5% discount*, and so on.

As a marketing operations person, you receive campaign briefs, which are documents you can use to create **Actions**.

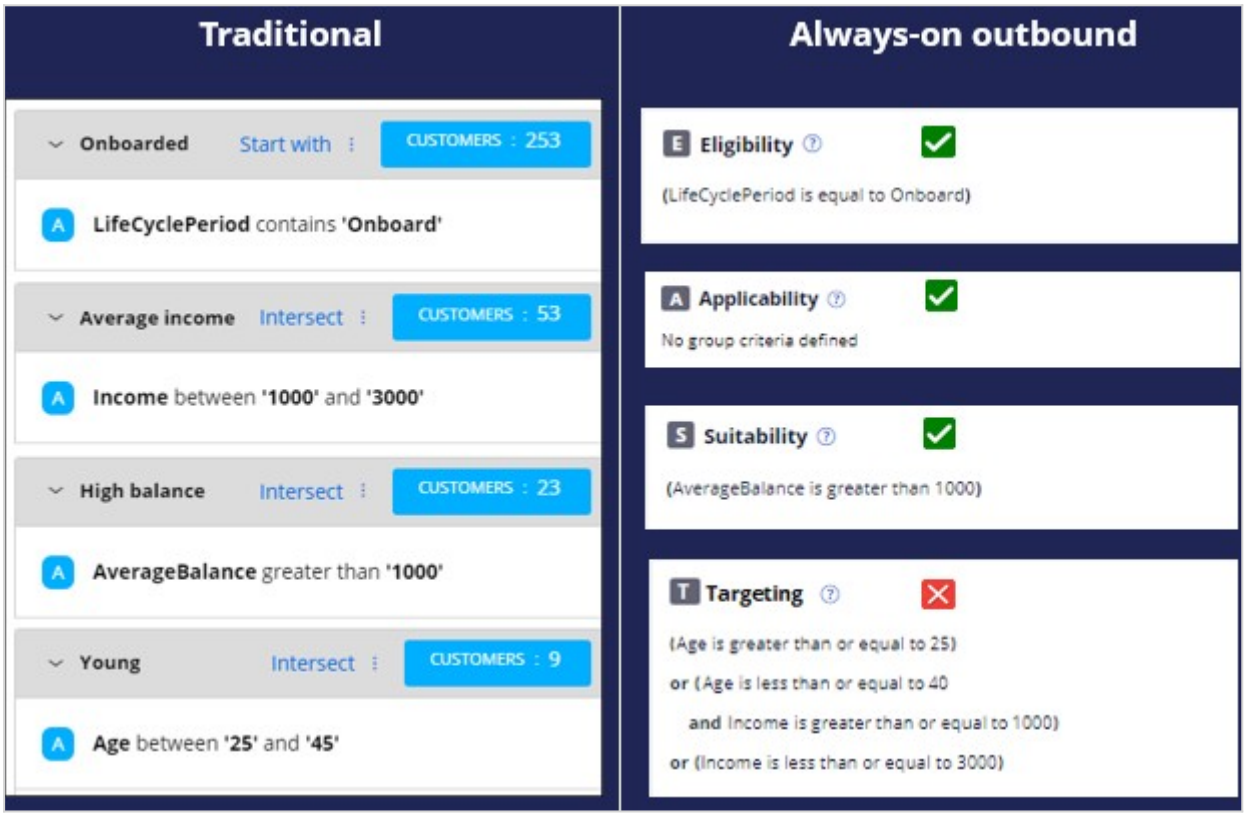
A campaign translates into an action or a set of actions delivered to qualified customers. In the always-on approach, you put an action into or out of play by changing its availability setting. The advantage in the always-on approach is that any adjustment to an action will propagate across all Issues and Groups, which means that you are optimizing across all programs and campaigns at once.



Segmentation

Traditionally, you would use the term segment, audience, or population interchangeably to refer to the target audience of a Campaign, and you would define granular criteria to identify this audience.

In the always-on approach, audience segmentation translates into engagement policies combined with Artificial Intelligence (AI).



By understanding the purpose of traditional segments, you can translate them into eligibility, applicability, suitability and contact policy rules.

When selecting targets, any criteria that are not based on clear business rules should be avoided. For example, targeting a specific demographic such as an age range or income level based on market research or intuition is not necessary. In the always-on approach, it's

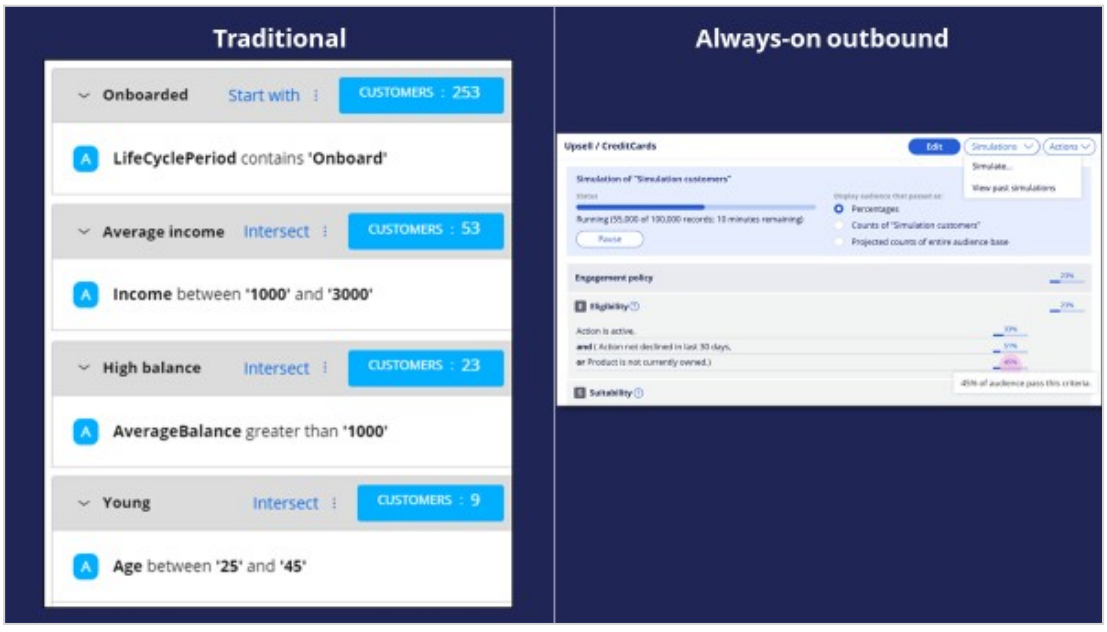
the job of the AI to choose the right action for each customer, once all disqualified actions are filtered out.

In the above example, the lifecycle period criterion is translated into an eligibility condition as it is a definite requirement of the business. The Average balance criterion is translated into a suitability condition as the business thinks the group of actions will be appropriate for customers who have such a balance. However, targeting an age range or income-based demographic are not clear business requirements. These conditions in the traditional approach are coming more from intuition and some offline analysis. Therefore, in the new always-on outbound approach, these conditions are not part of engagement conditions but are left to the AI. The AI will take care of finding the right customer segments that are more likely to have a positive response to the configured offers.

Segments, in the new approach, are used only to identify the starting population for an always-on outbound schedule (a multi-level campaign which initiates outbound actions). The starting population contains the list of potential customers to whom you want to send messages. For example, the starting population could be all customers who have opted in to receive promotional messages.

Segmentation reports

Traditionally, you might have used segments to generate reports on customers who match specific criteria.



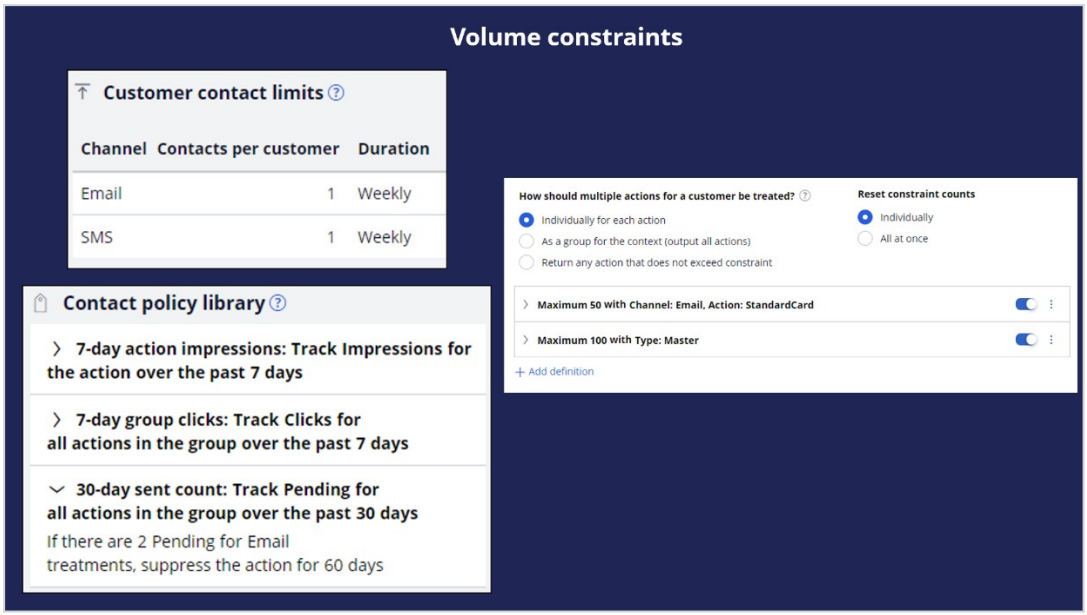
In the always-on approach, you use reports generated by the simulation facility in Next-Best-Action Designer to:

- Understand customer counts.
- Validate the effect of changes to engagement policies and AI controls.
- Visualize the action mix.

Volume caps

When dealing with any form of outbound communication, there is a need to limit the number of communications both on a per-customer basis and in terms of total messages generated by the system over a given time period.

In the always-on approach, you use volume constraints, contact limits and suppression rules to set caps on communications.



Scheduling

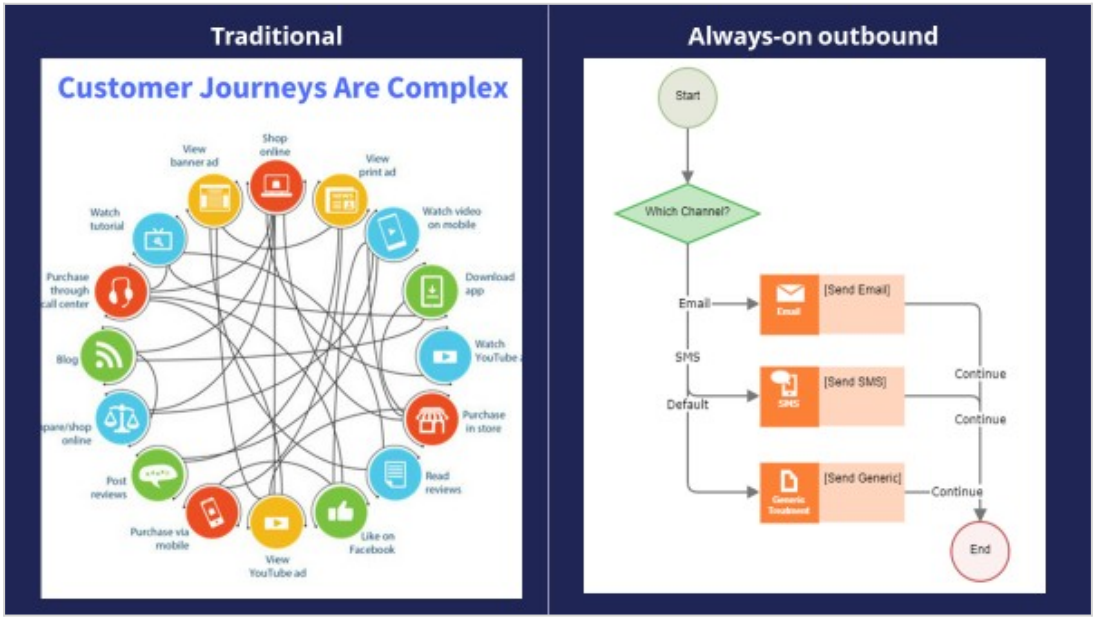
In a traditional marketing approach, there are several options to control the campaign schedule. For example, you can run a campaign as a one-off, or as recurring daily, weekly or monthly.

In the always-on approach:

- The schedule is always-on, it runs at a set frequency, for example on a daily basis.
- Actions are marked as in or out of play using the action ‘availability’ option.
- Emergency schedules can be set-up as secondary schedules.
- Contact policies help prevent communication fatigue in customers.

Journey guidance

Traditional campaign journeys can be long and complex. They are designed as deterministic journeys in which one campaign triggers the next, which triggers a third, and so on.



The always-on approach turns managing complex journeys into managing experiences:

- Logic in the channels should be minimized to focus on the overall experience. The number of steps involved in outbound communication, represented by action flow shapes, should be limited to 2 or 3 per channel.
- Next-Best-Action combines many actions to optimize experiences. Let the Pega brain decide the next step.
- Action flows shouldn't contain decision logic (that's in the brain) and should not try to adapt to customer or business changes.
- Use business hierarchies (Issues/Groups) to organize the business outcomes and actions that collectively make up experiences.

Business use case: Always-on outbound customer engagement

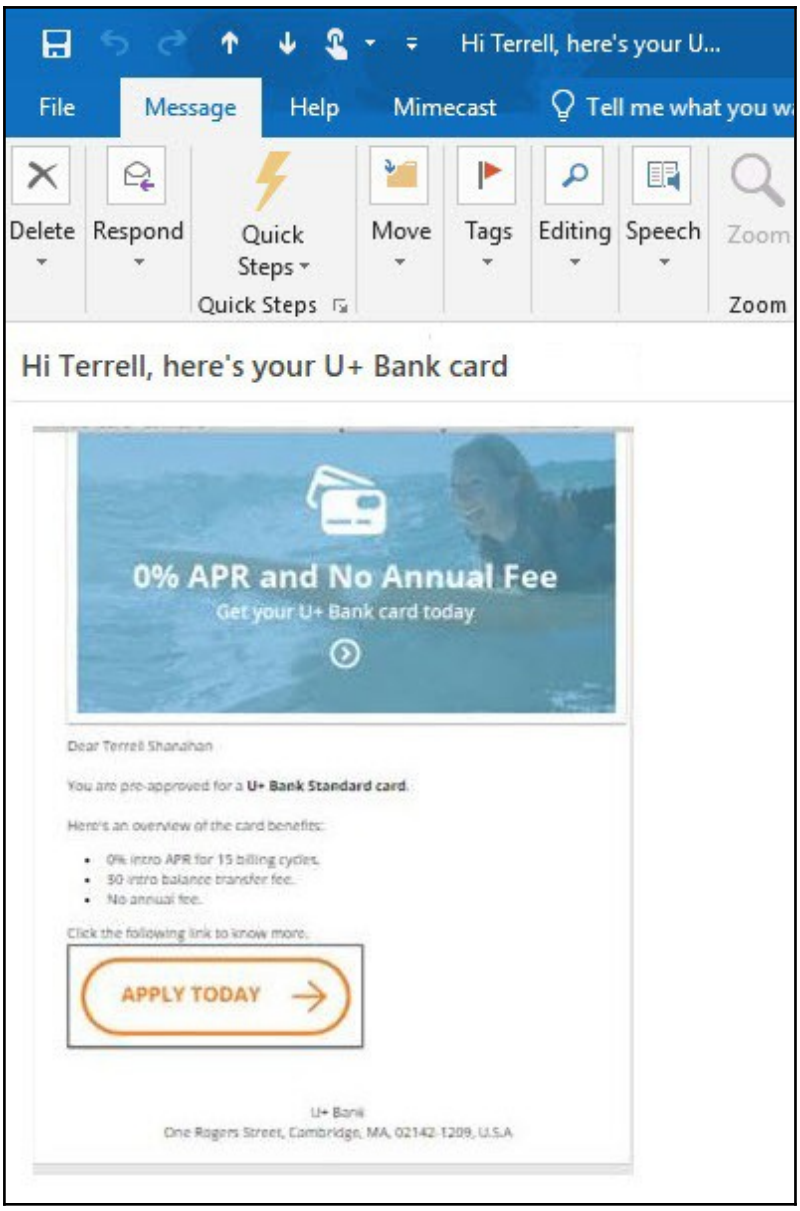
Introduction

U+ Bank has recently implemented the cross-sell on the web microjourney with the goal to increase the engagement with their customers on the web channel. The bank uses Pega Customer Decision Hub™ to recommend relevant banner ads to its customers when they visit their personal portal.

Customer Decision Hub combines customer information, information about their past communications with the bank, current contextual information, business rules and the predicted customer behavior, as calculated by Artificial Intelligence (AI) to select the Next-Best-Action, which in this case is the best sales offer for each customer.

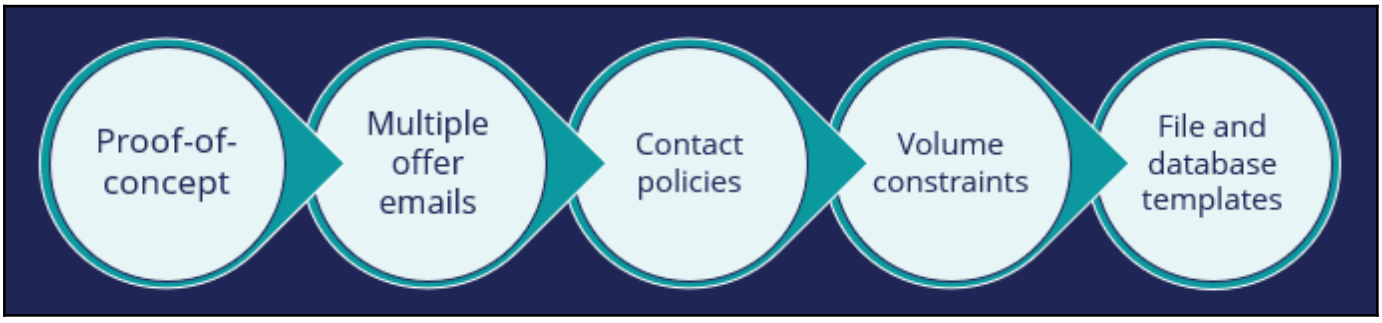
Satisfied with the results of the first microjourney, the bank now wants to extend these Next-Best-Action recommendations to be delivered via one of their outbound communication channels, email.

In this microjourney, the main intent of U+ is to increase the customer engagement on email channel. This can be measured by the click-through rate. A click-through metric is recorded when the customer clicks on the ‘APPLY TODAY’ button in the email received.



Implementation phases

The marketing operations team plans to implement the requirement in multiple phases.



The first phase is a proof-of-concept phase. In this phase, the goal is to send a credit card offer via email to qualified customers. This requires adding an email treatment and configuring the flow to an existing action, enabling the email channel, and configuring the always-on outbound schedule.

As a result of this phase, the Standard card offer details will be sent to qualified customers in an email. For example, if a customer, Stephen John, qualifies for the Standard card offer, the always-on outbound will send him an email with the offer details. He can click on the 'APPLY TODAY' button, it takes him to the credit cards page on the bank's website where he can read more details about the offer and apply for it, if interested.

In the second phase, the bank plans to include more credit card offers to be promoted via email. For example, if a customer is eligible for more than one credit card offer, he will be presented with the top offer he qualifies for. The prioritization uses AI and other factors such as business weights and levers to select the top offer for a customer.

In the third phase, the bank would like to introduce contact policy rules to ensure that a customer does not receive the same offer message twice within a period of time. For example, a customer will not receive an offer email for 60 days if one was sent in the past 30 days.

In the fourth phase, the bank would like to apply some limitations on the outbound volume due to certain operational constraints. The IT department of the bank has imposed a restriction on the number of emails that can be sent in a day. The marketing team has been asked to apply some limitations on the outbound volumes of the email.

The fifth phase is to share action details with a third-party email distributor. To comply with the security and spamming regulations, the bank has decided to use a third-party email delivery service instead of using the inhouse email server. As a result, the action details need to be written to a database table. The action details will then be shared with a third-party email distributor.

In summary, you will learn more about how U+ bank will leverage the always-on outbound capability in this phase of the project.

Sending offer emails

Description

Learn how to send offer emails to qualified customers. Reuse existing actions and customer engagement policies configured in Next-Best-Action Designer and extend them for outbound customer engagement in the email channel.

Learning objectives

- Configure the always-on brain to send offer emails

Sending offer emails

To market your offers, you can send offer emails to qualified customers. Pega Customer Decision™ Hub enables you to re-use existing actions and customer engagement policies configured in Next-Best-Action Designer and extend them for outbound customer engagement in the email channel.

Transcript

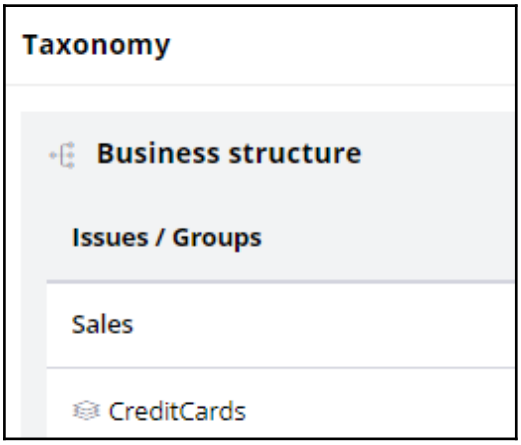
This demo shows you how to send offer emails to qualified customers.

U+, a retail bank, wants to use Pega Customer Decision Hub to send emails related to a credit card offer to qualified customers.

The email contains the offer details and a call to action. When a customer clicks the **APPLY TODAY** call to action in the email, they are directed to the credit cards page on the bank's website, where they can learn more about the offer and apply if interested.

This is the Pega Customer Decision Hub portal. Before configuring an action to send offer emails to qualified customers, look at the Next-Best-Action Designer configured by U+.

The **Taxonomy** tab contains the business hierarchy of issues and groups. Every action presented to the customer is classified within an issue/group hierarchy. In this case, the bank wants to do cross-sell/upsell of credit cards. As a result, the bank created one Issue called **Sales** and a Group called **CreditCards**.

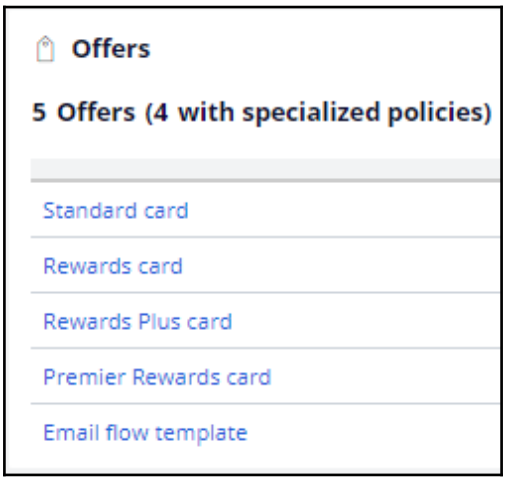


Now, navigate to the **Engagement policy** tab to view the business rules and actions defined for the CreditCards group.

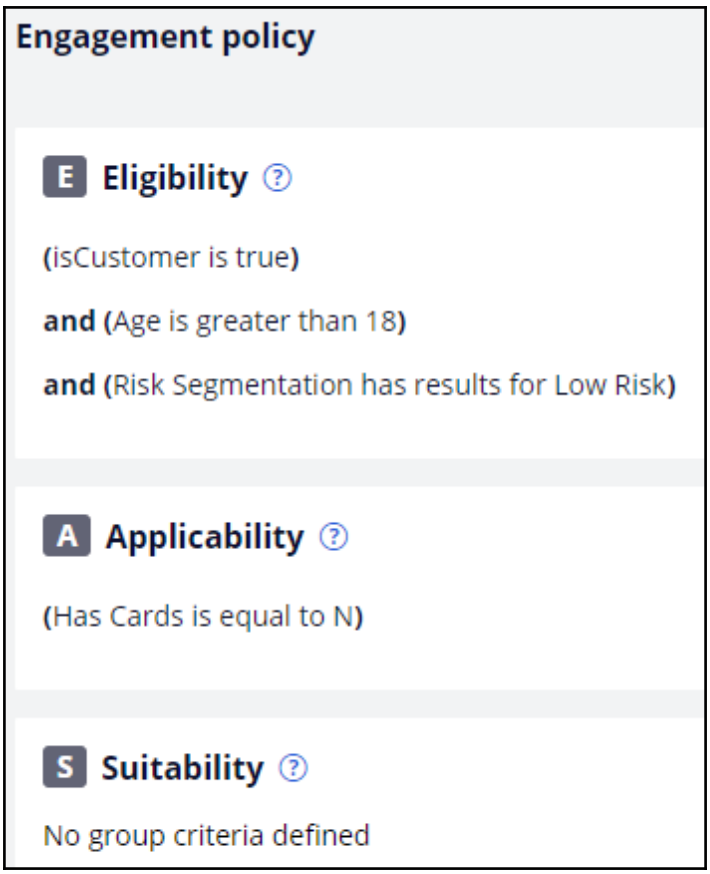
These engagement policy conditions determine which customers qualify for the actions. For example, the eligibility condition **Age is greater than or equal to 18** implies that only customers who are equal to or over the age of 18 are eligible for the credit card offers.

Also, credit card offers are applicable to customers only if they do not currently own a credit card.

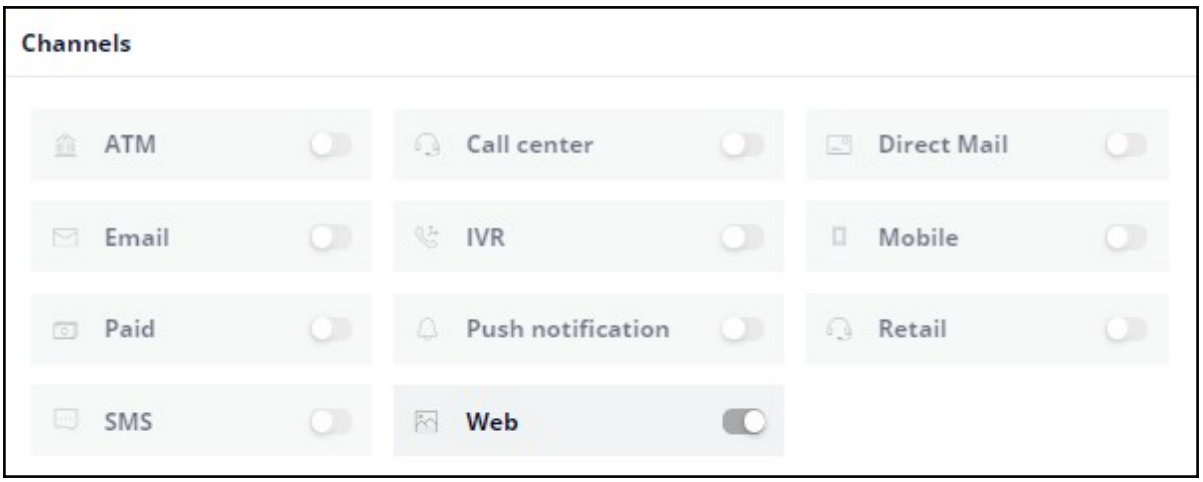
Notice that a consultant has already created a few actions under the Sales/CreditCards hierarchy.



These actions correlate with the credit card offers that the bank wants to promote.

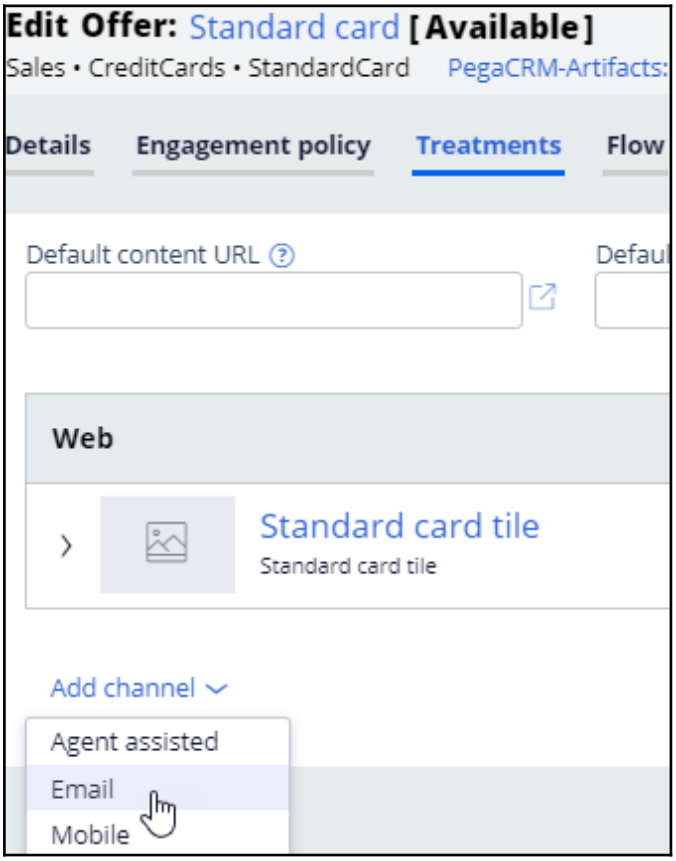


Currently, the bank promotes credit cards on the web channel only. The bank wants to extend this promotion to the email channel.

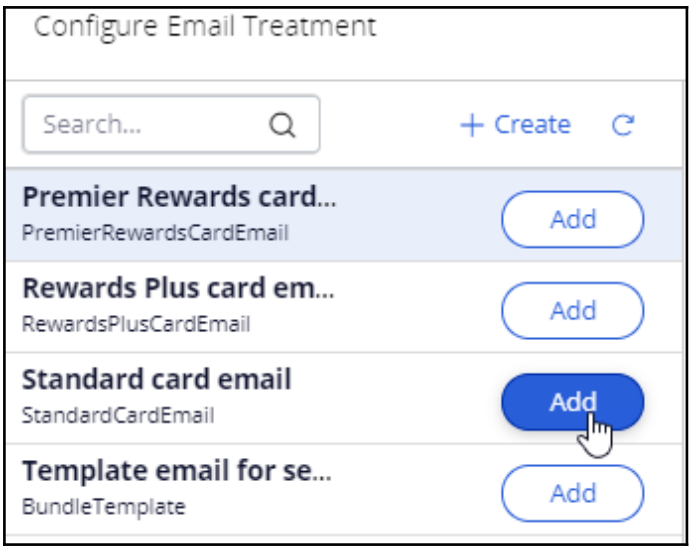


The bank wants to begin by sending the Standard card offer emails to qualified customers. To send emails in an always-on outbound environment, you need to add an email treatment to the action.

Open the **Standard card** action to add an email treatment.

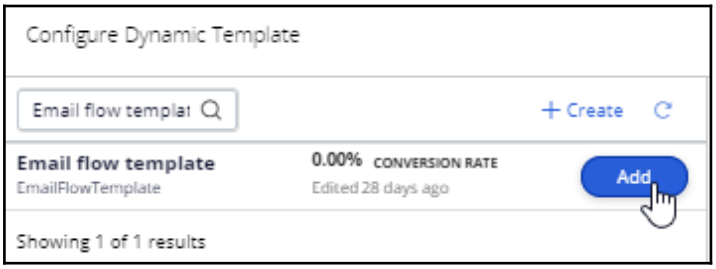


You can use an existing treatment or create a new one. In this case, you use an existing email treatment.

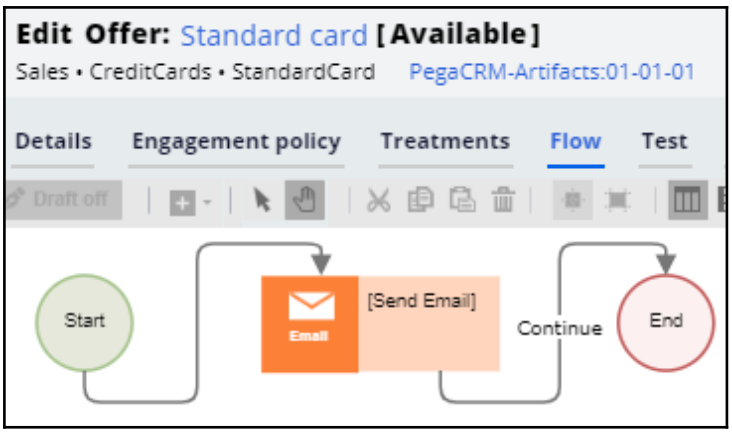


Next, you must configure the action flow. The action flow is a flow diagram that contains the sequence of steps carried out during the lifecycle of an action. You can create action flows once and reuse the flows across actions by using the **Dynamic template** option.

Now, click **Dynamic template** to add an action flow template.

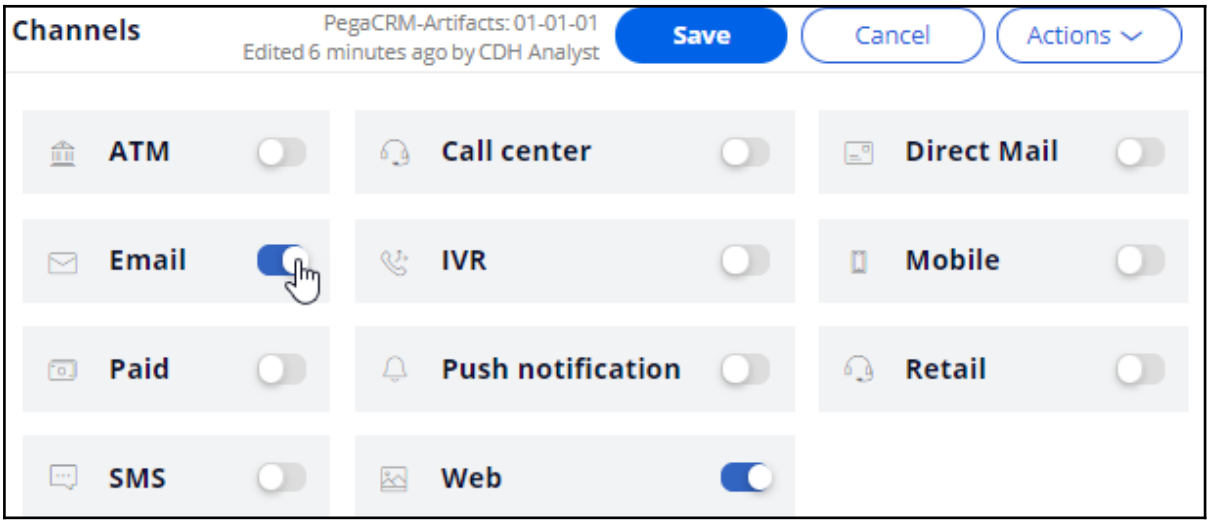


Notice that the flow has only one key shape: the **Send Email** shape. It represents the outbound email delivery.



Now, on the **Channels** tab, you can enable the channels and triggers that invoke a Next-Best-Action evaluation.

In this case, as U+ wants to send out emails, enable the **Email** channel.

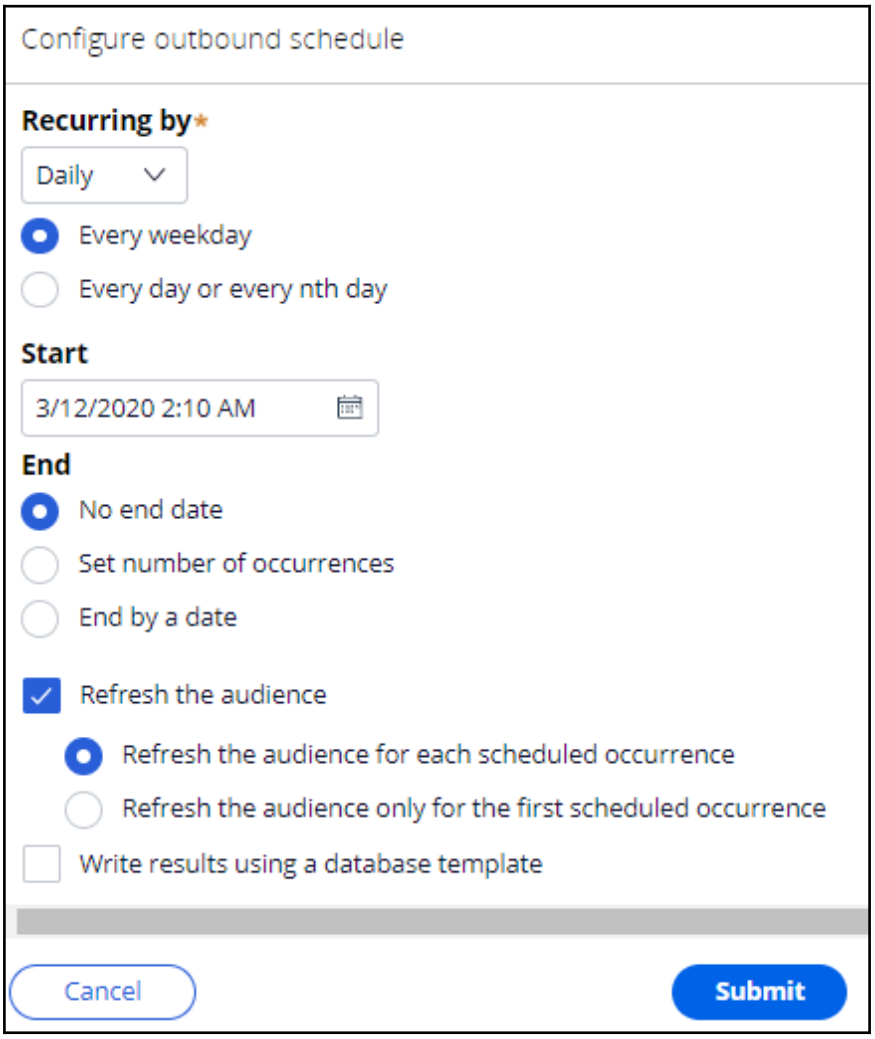


In the always-on outbound paradigm, the brain evaluates the next best action for each customer identified in a segment, which contains the potential list of customers to whom you want to send messages. The system can send these messages at a regular frequency (for example, daily). You configure the **Primary schedule** to set the frequency.

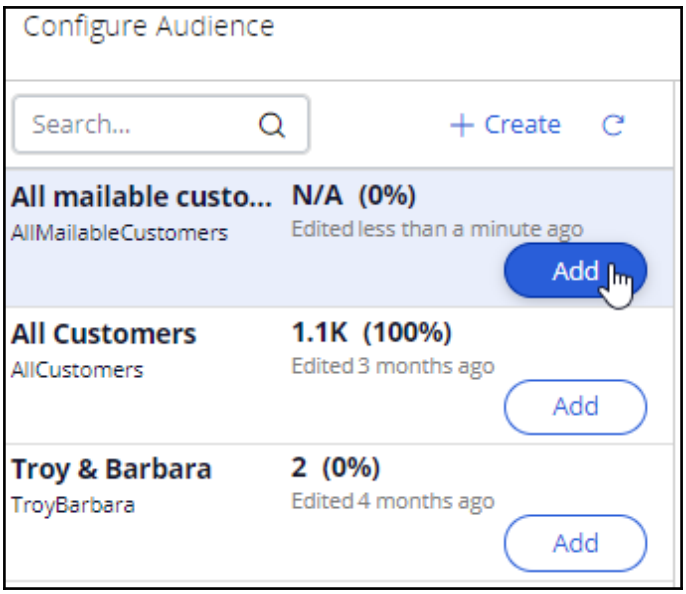
The schedule has two mandatory configurations: **Recurrence** and **Starting population**.

To configure an outbound schedule, first, set the required **Recurrence** frequency. In this case, retain the default frequency, *Daily*. Then, select the **Refresh the audience** check

box. Enabling the **Refresh the audience** option ensures that the latest customer information is always used when running the schedule.

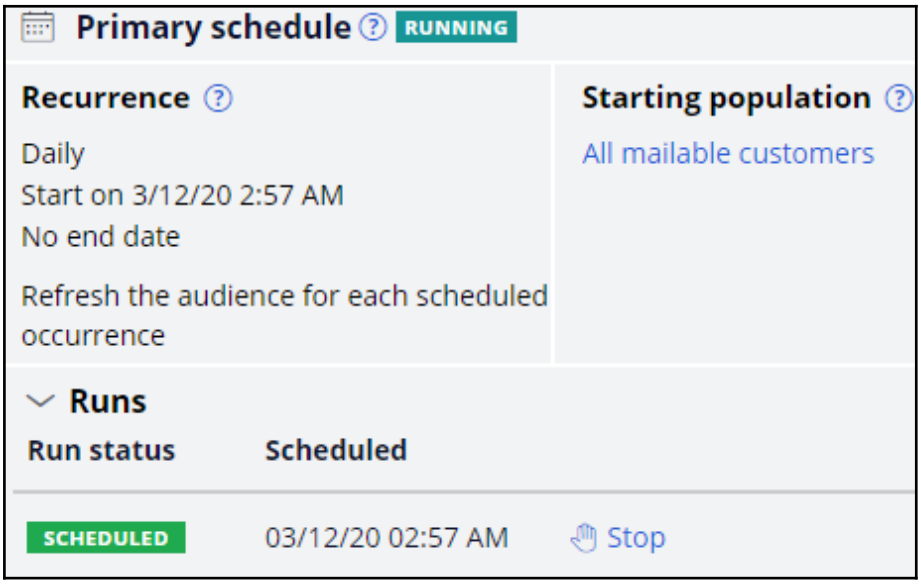


Next, select the segment that contains the list of customers to be considered by the brain for outbound messaging. Typically, this is a large population of all customers to whom you potentially want to reach out. In this case, select the **All mailable customers** segment.

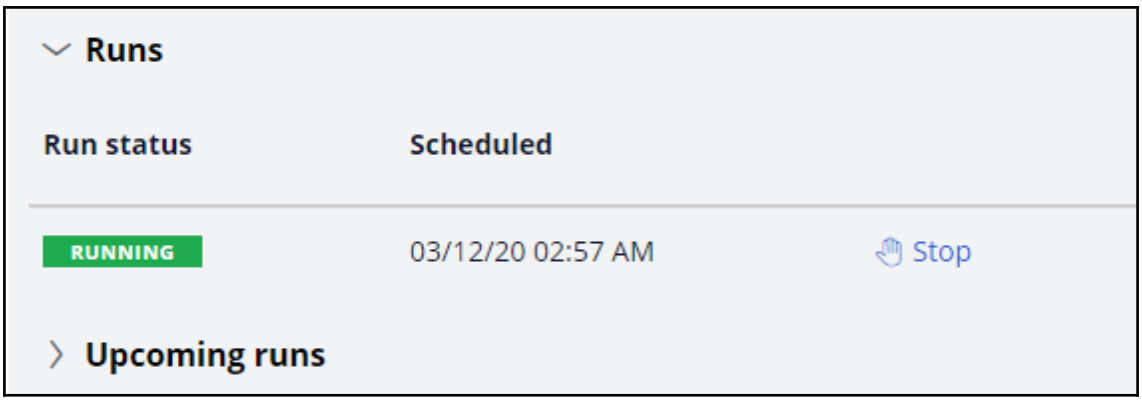


With that, all the necessary configurations for this scenario are complete.

Run the schedule. When the date and time for a scheduled run are reached, an entry is displayed with the status **Scheduled**, which indicates that the run is about to begin.



When you refresh, the status changes to **Running** once processing begins.



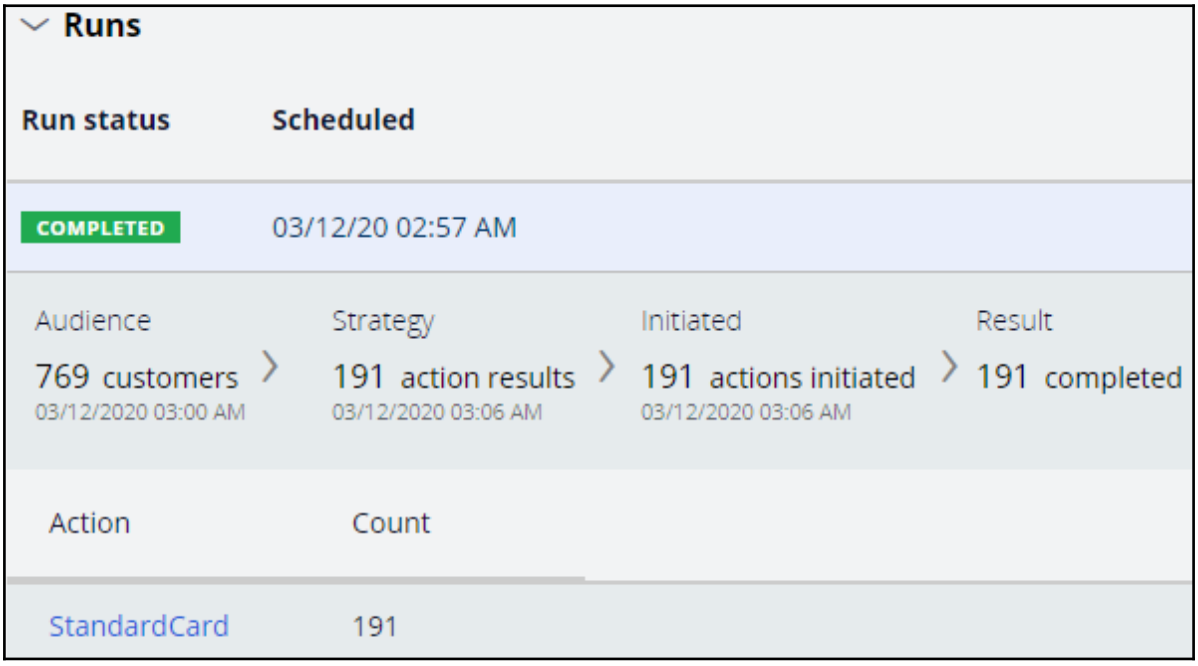
You can refresh to see the latest status. Once the run is complete, you can see the results of the run.

In the completed run results, you can see the number of customers selected in the **Audience** stage, which is the count of customers selected by the Segment.

You can also see the number of actions identified by the strategy, which is the count of customers selected by the brain.

The count in the **Initiated** section represents the number of actions initiated for outbound messaging. The count in the **Result** section is the number of actions that have completed all the steps defined in their action flow.

You can also see the actions in the current run, which the brain selected.



Qualified customers receive the email. When they click the **APPLY TODAY** call to action, they are taken to the preconfigured URL, which, in this scenario, is the Credit Cards landing page on the bank's website.

This demo has concluded. What did it show you?

- How to enable the email channel in Next-Best-Action Designer.
- How to add an email treatment to an action to have an email offer available for the outbound run.
- How to schedule and run an outbound run.

Defining the starting population

Description

The starting population is the potential list of customers you want the brain to consider for always-on outbound customer engagement. Learn how to create a segment and configure it with basic criteria to identify the starting population for Next-Best-Action outbound runs.

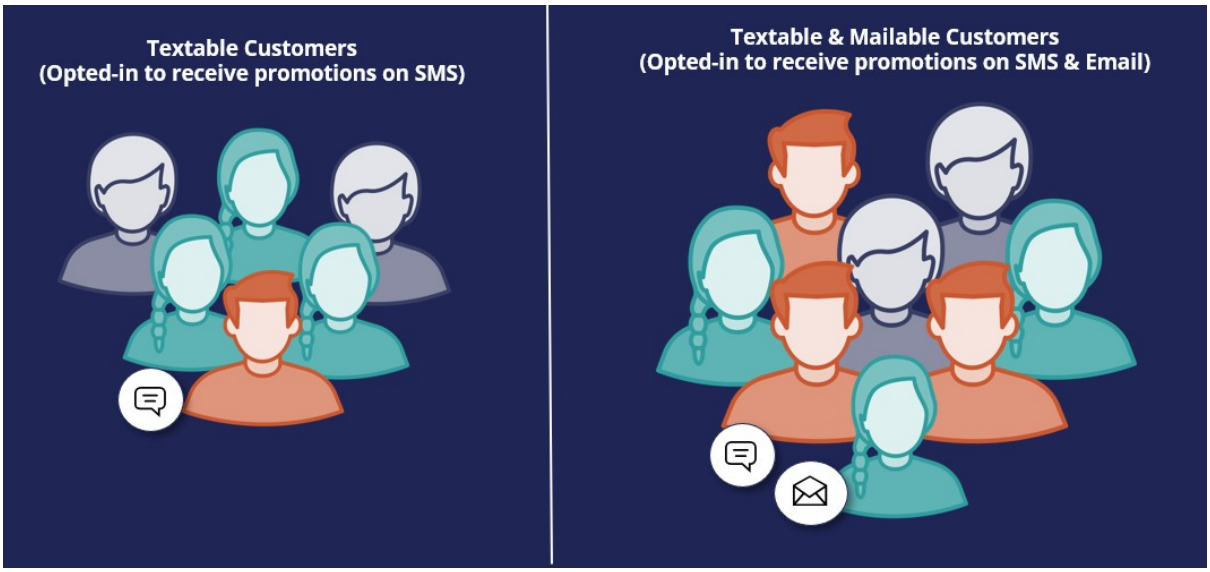
Learning objectives

- Describe the concept of segmentation
- Explain how to create a segment for the starting population of an outbound run

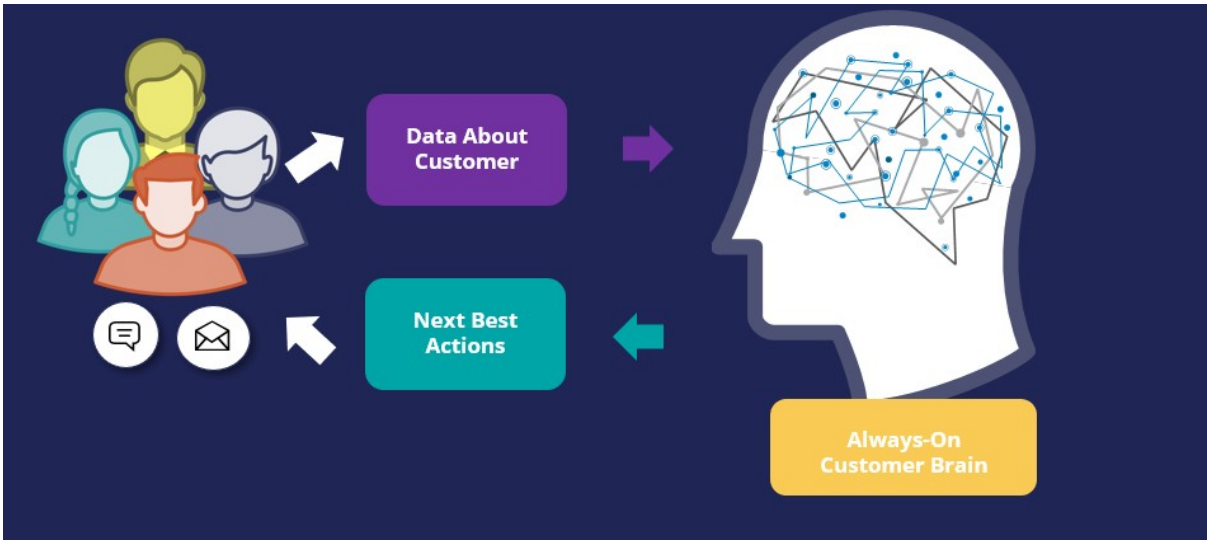
Segmentation

What are segments?

In Pega Customer Decision Hub™, the audience is a list of potential target customers, implemented using the segment component. A segment is a reference to a database table containing a list of customer IDs that match specific criteria.



In the always-on outbound paradigm, the Pega brain evaluates the Next-Best-Action for each of the customers identified in a segment, which contains the list of potential customers to whom you want to send messages.



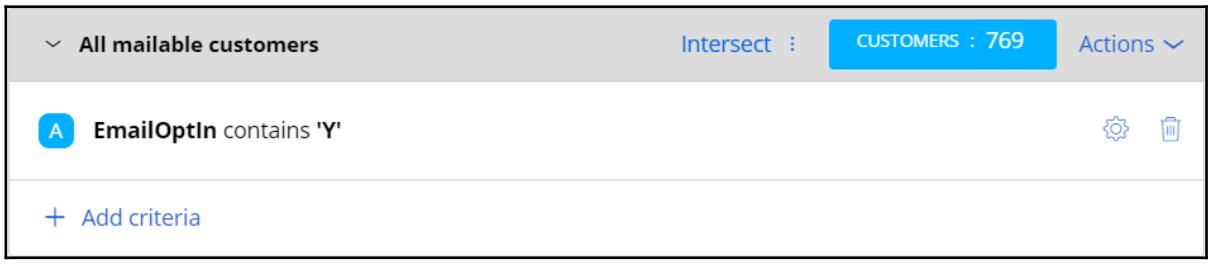
This set of customers is known as the starting population. The customers in this group will be further qualified through eligibility, applicability, and suitability criteria configured in Next-Best-Action Designer.

Criteria in a segment

To select a starting population, you apply a few high-level criteria to a segment. It's best practice not to get too granular at the segment level, rather use eligibility, applicability, and suitability rules configured in Next-Best-Action Designer to fine-tune your criteria once the starting population has been selected.

You can define one or more conditions that must be true for a customer to be included in a segment.

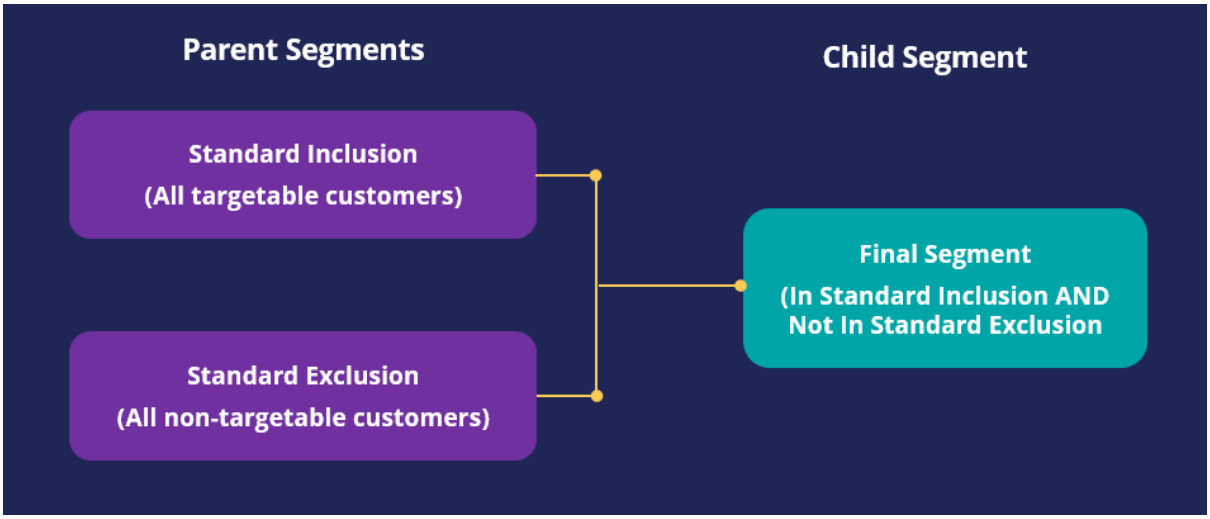
For example, to send emails related to a credit card offer to a target audience, you should first define a criterion that will filter for customers who have opted-in to receive promotional emails.



Segments hierarchy

A segment can reference a "parent" segment, enabling you to create a hierarchy of segments.

For example, you can create top-level segments that identify common lists of customers for exclusion or inclusion in various "child" Segments. Standard top-level segments allow global communication rules to be implemented by forming the basis of customer lists that automatically adhere to these rules. The rules can include, for example, standard exclusions, which are the core customers who should not be contacted, or standard inclusions, which are the core customers who may always be contacted. The resulting customer lists can be used as the starting point for creating the final segment.



If changes are made to global rules, the definitions of the standard top-level segments can be modified accordingly, and as a result, every segment that references them will automatically be re-aligned to the new rules.

Creating a segment

Business scenario

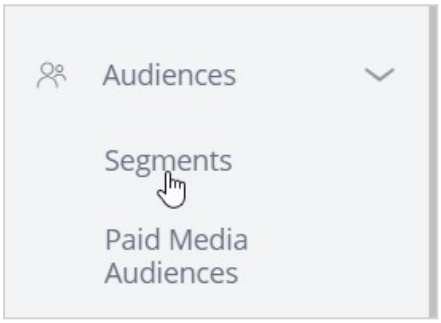
U+, a retail bank, wants to use the always-on outbound approach to send promotional emails to qualified customers. The bank wants to include all customers who have opted in to receive promotional emails as the starting population for the outbound schedule.

Creating a segment

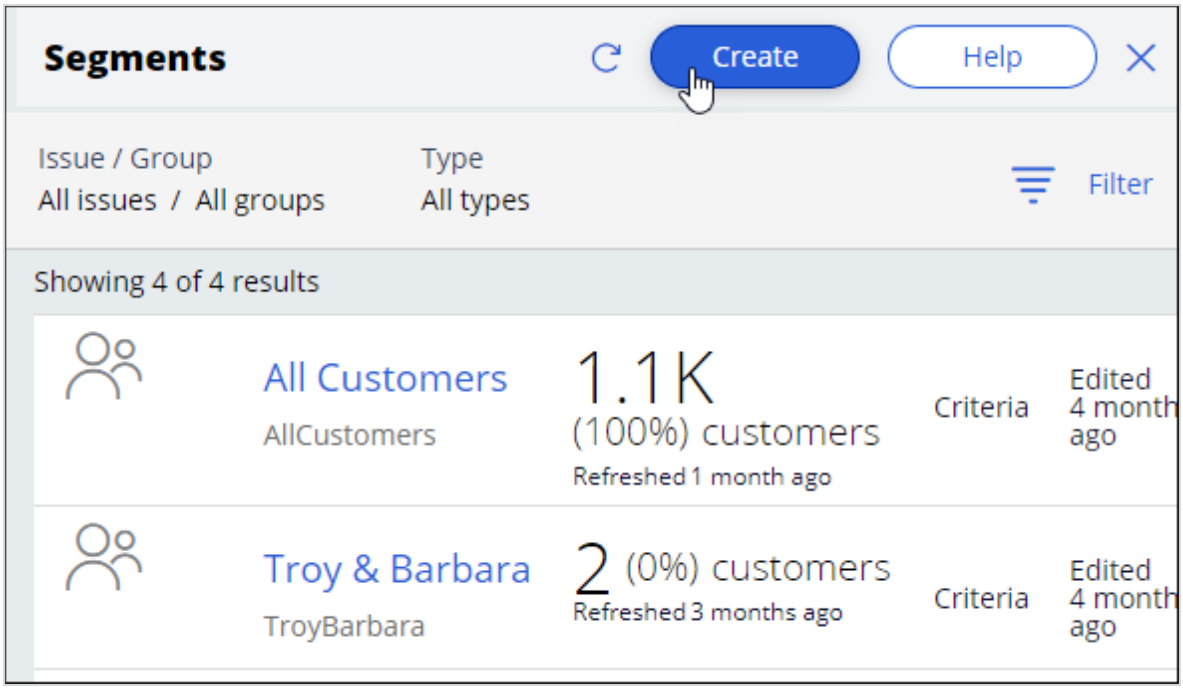
To meet the business requirements, you need to create a segment with two criteria.

1. A criterion to reference the existing top-level segment, ***All Customers,*** which contains a list of all customers in the customer base.
2. A criterion to check if customers have opted in to receive promotional emails.

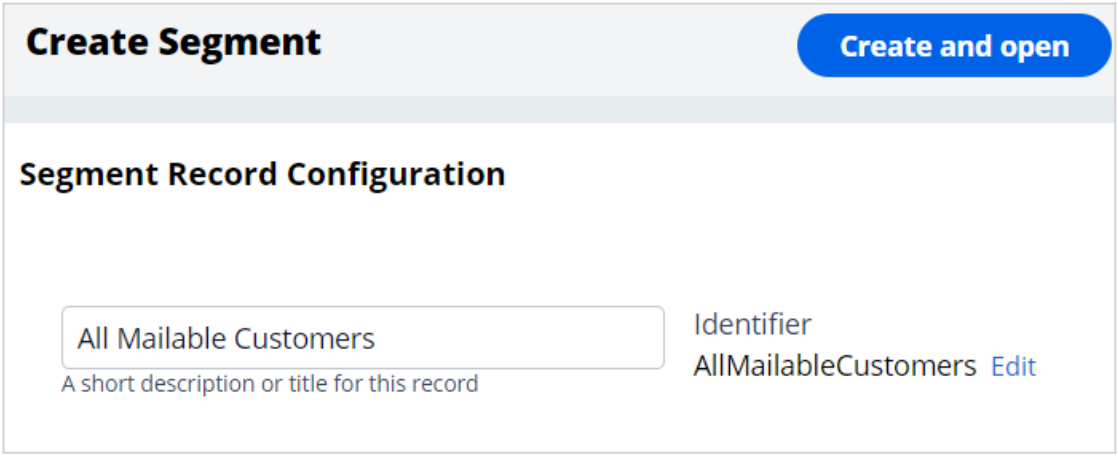
Segments are managed on the Segments landing page, which can be accessed from **Audiences** -> **Segments** in the navigation menu.



You can open existing segments or create a new segment from here.



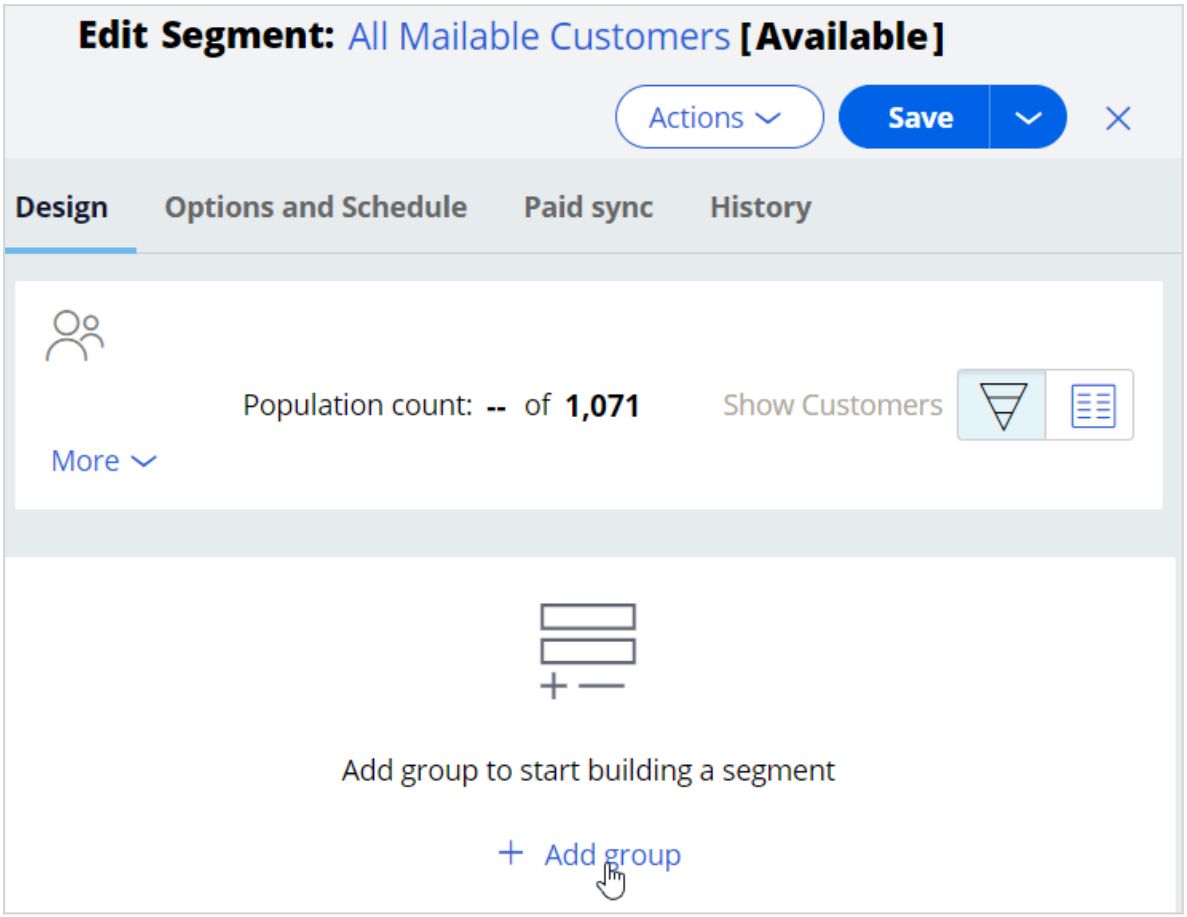
Provide a short description for the new segment, and the identifier is automatically populated when you tab out.



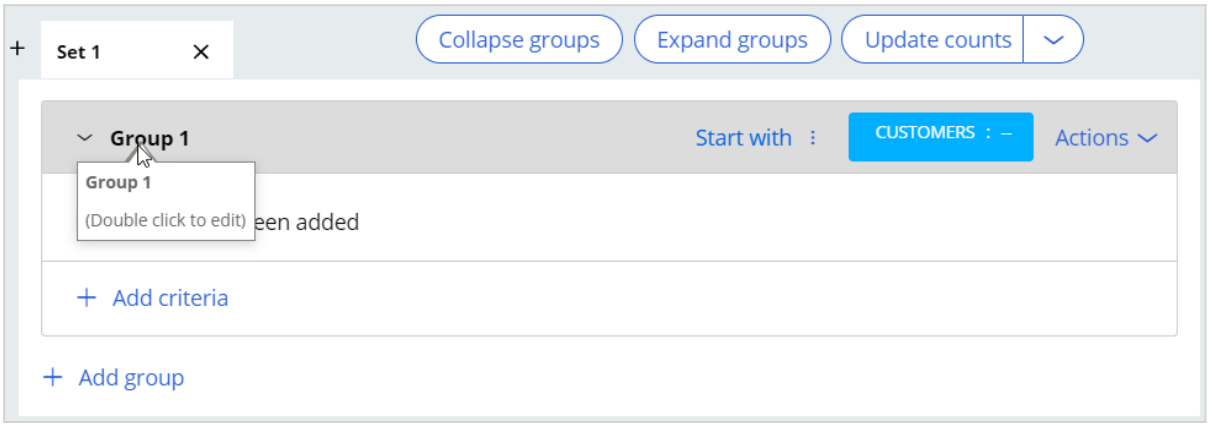
Entering the segment criteria

The **Design** tab is where you assemble the criteria required to identify customers of interest.

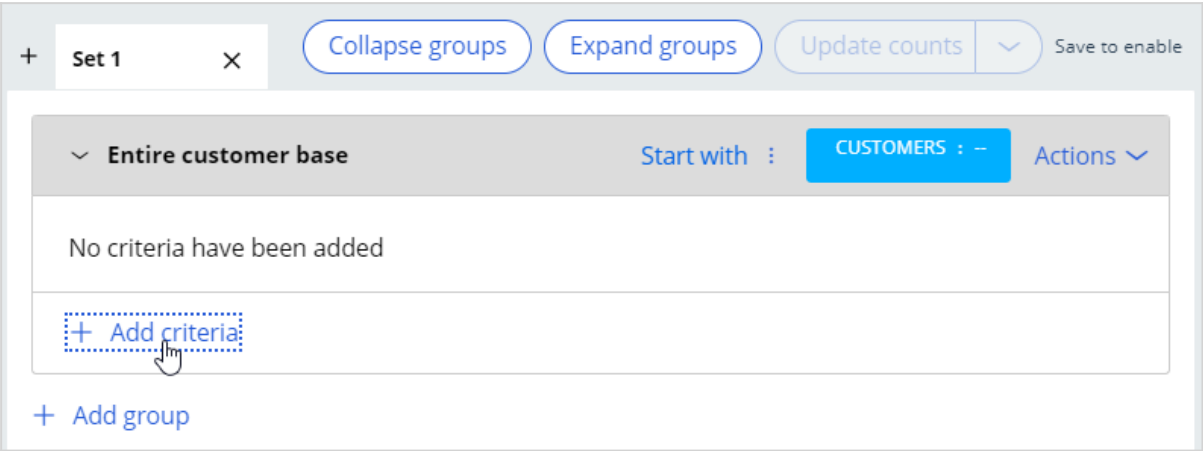
Segment criteria are grouped for ease of reading. So, before you can add the first criteria, add a criteria group.



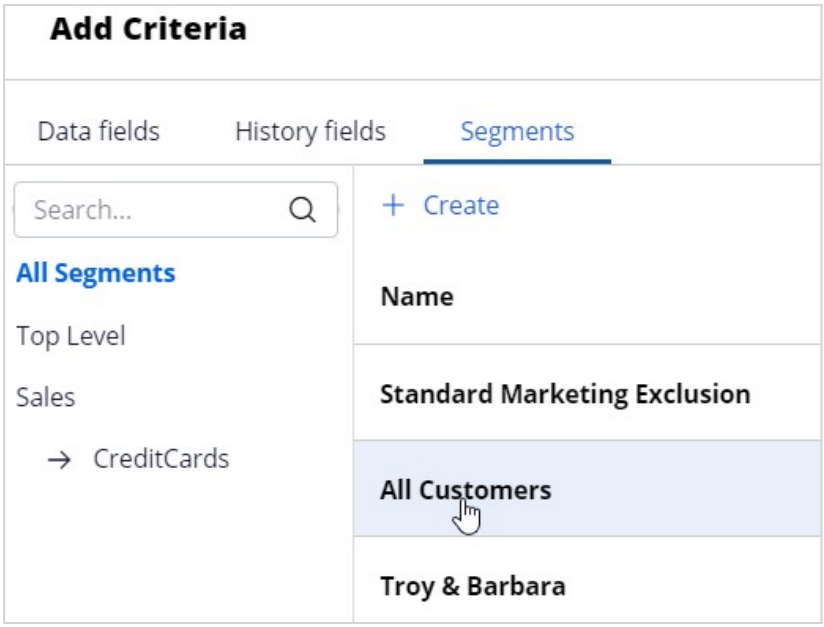
You can provide a more descriptive name for the criteria group.



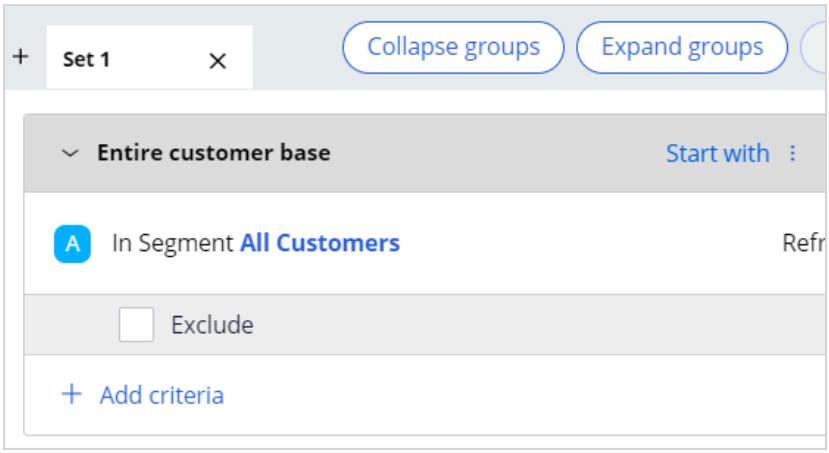
In this scenario, the bank wants to consider all customers in the customer base, then select the customers who have opted in to receive promotional emails. The bank has already created the ***All Customers*** *segment*, which contains the list of all customers. You can reference this segment in the first criterion.



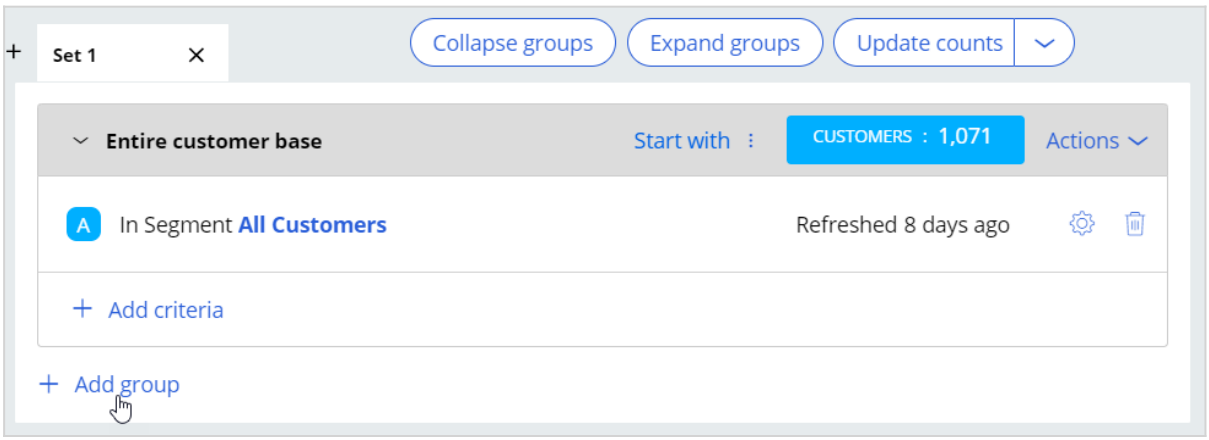
In the **Add Criteria** window, the **Segments** tab lists all available segments. Select the existing ***All Customers*** segment.



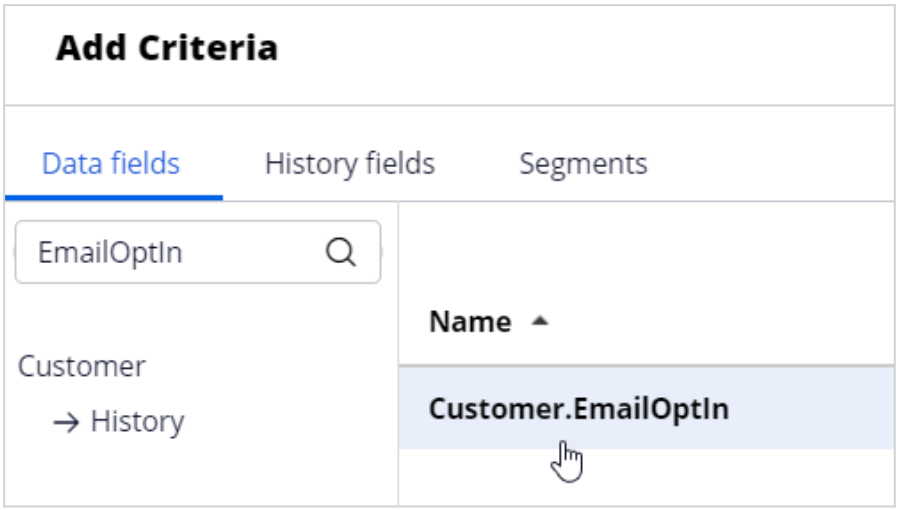
The **All Customers** segment is added as the first segment criterion. The **Exclude** option allows you to exclude the result of a criterion.



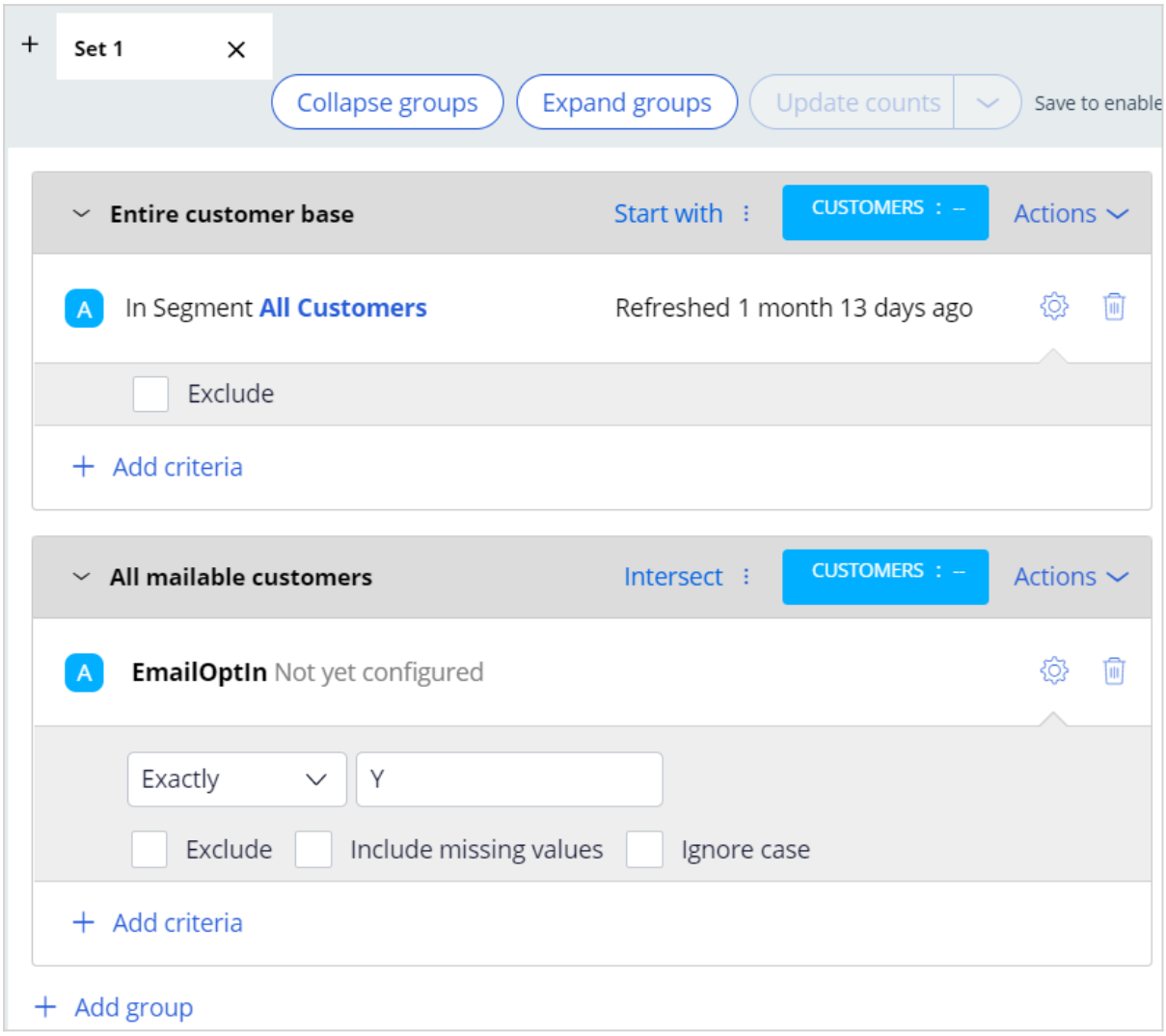
The next step is to add another criterion to identify customers who have opted in to receive promotional emails. You can add the new criterion in the existing criteria group or in a new group.



In the **Add Criteria** window, the **Data Fields** tab lists all available customer properties. You can either select the field directly or search for it by entering the partial name in the search field. Then, select the desired field from the search results. In this system, the field **EmailOptIn** contains information about whether a customer has opted in to receive emails or not.



Once the field is selected, you can configure it to meet the business requirement. In this system, value ***Y*** indicates that the customer has opted in, and ***N*** indicates that he/she has not opted in to receive promotional emails.



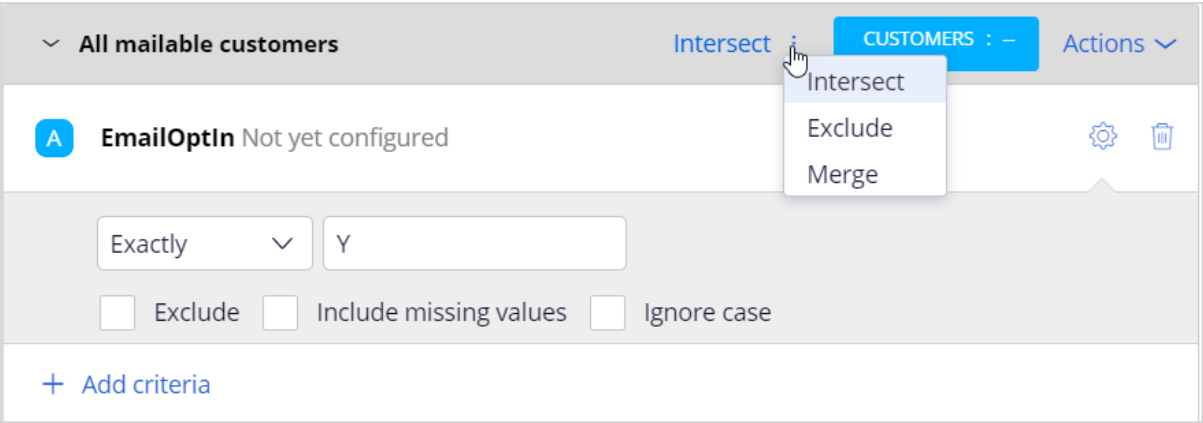
The **Include missing values** option is used to include results that do not have a value specified for the selected field.

The **Ignore case** option is used to perform a case-insensitive search. You can leave both options unselected for this scenario.

The **Update Counts** option is used to update the population count of the segment while you are building it.

> Note: The **Update Counts** option is enabled when you save the segment.

You can combine the results of a criteria group with the result from the criteria group above it using one of the three options:



Intersect selects the customers the two results have in common.

Exclude excludes the result of the current criteria group from the result above it.

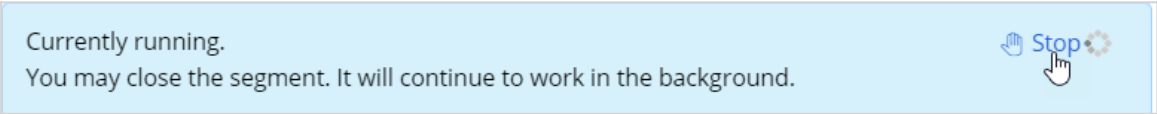
Merge combines the results of both criteria groups.

Save and run the segment

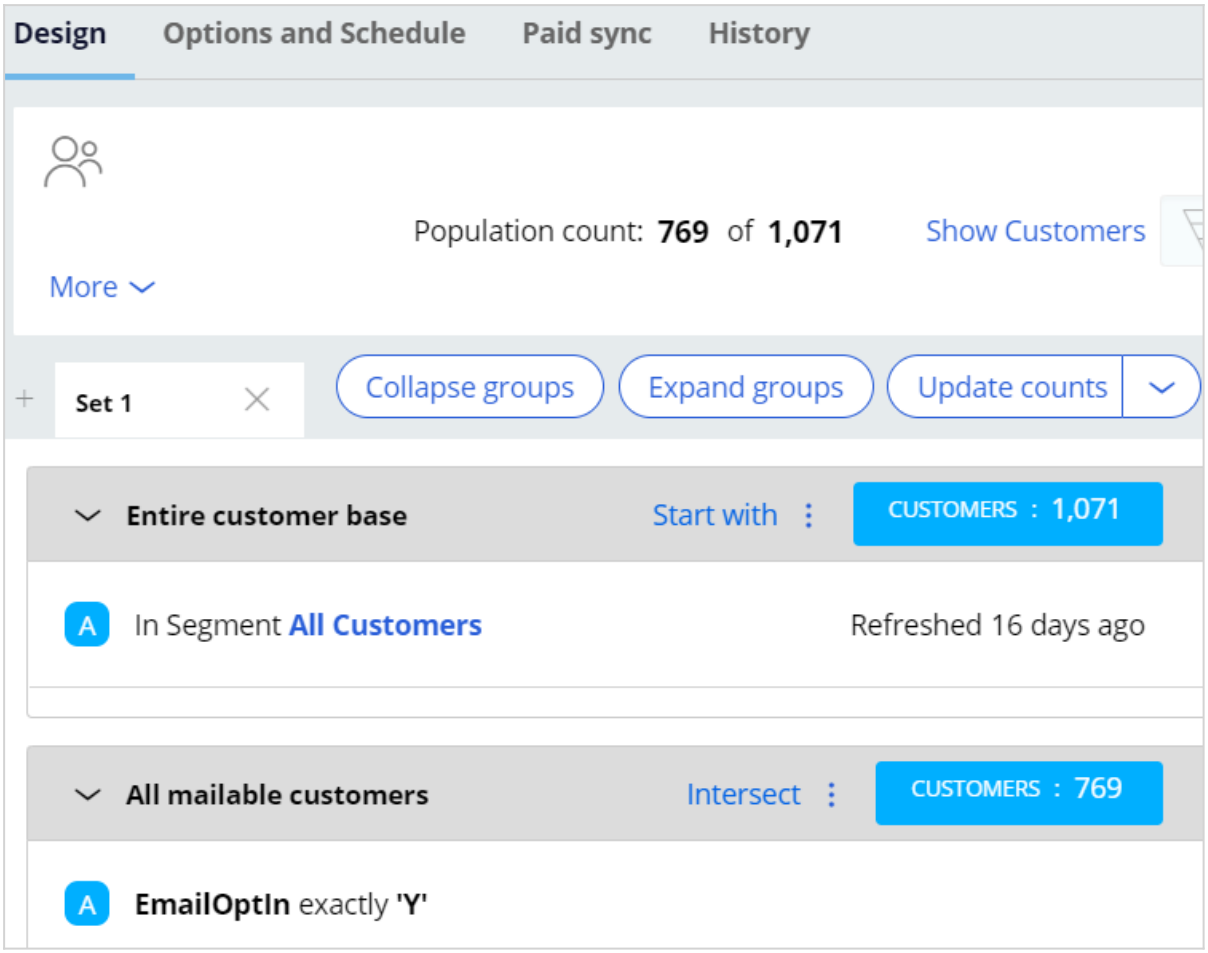
When you are done defining all the segment criteria, you can save and run the segment. Running the segment will populate the number of customers in a segment out of the total number of customers in your application.

Click **Run** to run the segment.

While the segment is running, you can stop the execution by clicking the **Stop** button.

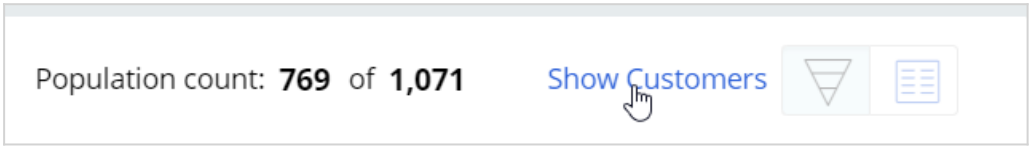


Once the run is completed, the number of customers in the resulting segment is displayed as **Population count**.



There are ***1071*** customers in the ***All Customers*** Segment, out of which ***769*** customers have opted in to receive promotional emails.

Click the **Show Customers** link to preview the list of customers selected for this segment.

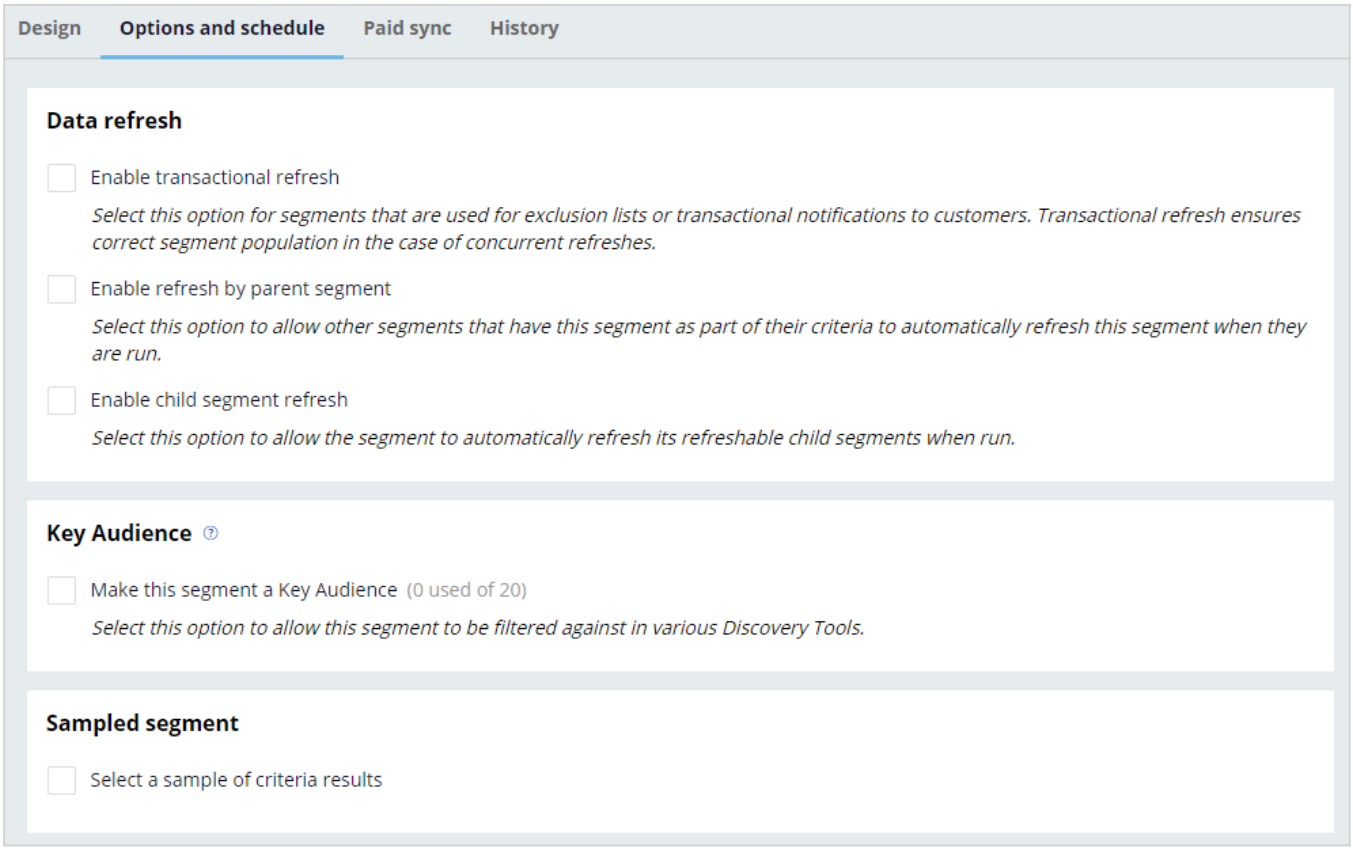


The list is shown in a separate window.

CustomerID*	ACCOUNT ID	Title	Full Name	Gender	Age	Language	MaritalStatus
14			Troy Murphy	M	26		Married
15			Barbara Stockton	F	32		Single
16			Joanna Williams	F	25		Married
17			Robert Walton	M	26		Single
18			John Smith	M	45		Single
19			Arnold Green	M	56		Single
CON-1			Layne McLaughlin	F	19		Single
CON-10			Ezekiel Funk	M	32		Single

Key segment configurations

On the **Options and Schedule** tab, there are two key settings under **Data refresh** that control how data in the segment is refreshed at run-time and what level of control a segment can exert over other segments.



When the **Enable refresh by parent segment** option is enabled, the segment will be refreshed when the other segments that reference it are run.

The **Enable child segment refresh** option allows you to control the cascading effect of the refresh operation. The segment can automatically refresh data in its child segments if they are marked as refreshable.

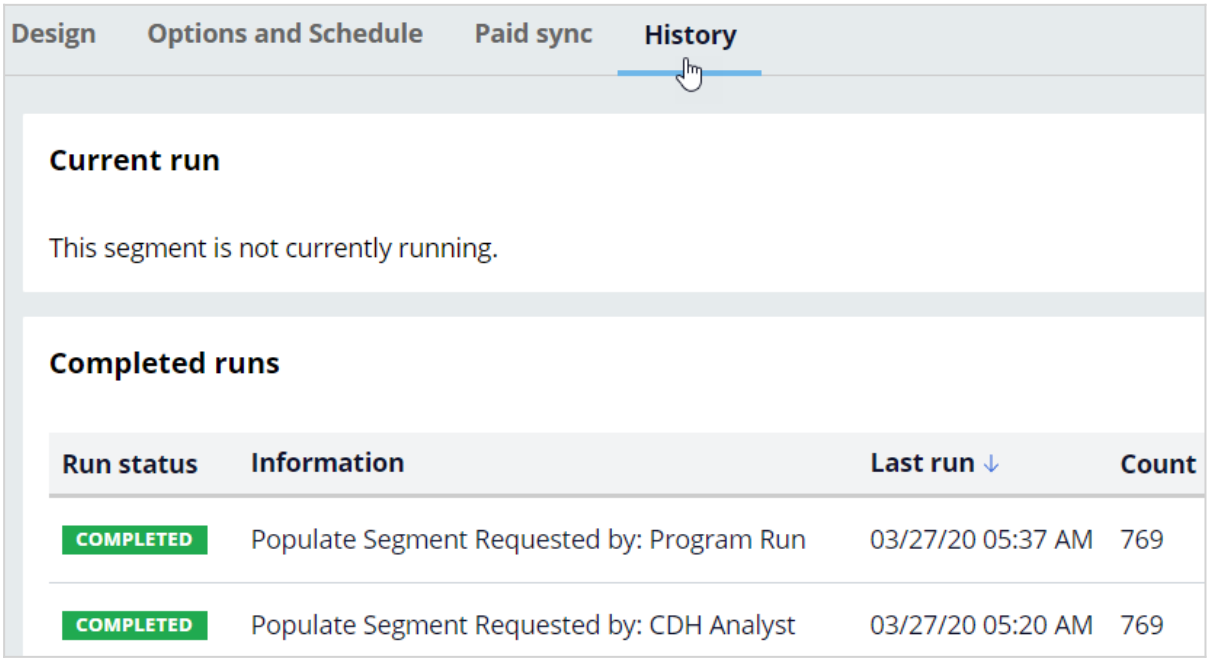
Marking a segment as a **Key Audience** makes it accessible in various Discovery tools like Action Performance Tracker. This allows for the action performance analysis of outcomes, related KPIs, and metrics, providing insights into what worked and potential opportunities.

Note that due to computing resource constraints, a maximum of 20 Key Audiences are allowed.

The **Sampled segment** option allows you to select a random sample of a segment result to be selected as the final segment result.

Segment run history

On the **History** tab, you can view the details of previous execution runs. The history lists the runs triggered manually by a user, indicated by ***Populate Segment Requested by: <user name>.*** *It also lists* runs triggered by the outbound schedule in Next-Best-Action Designer, indicated by ***Populate Segment Requested by: Program run***.



Defining an action for outbound

Description

A Next-Best-Action is selected by the brain after it considers customer engagement policies, business objectives and recommendations from the AI. An action can be presented to the customer on various inbound and outbound channels. Learn how to configure an action to make it suitable for outbound customer engagement and design a visually appealing email message using easy-to-use templates. Also, learn how to configure an action flow, which contains the steps involved in delivering an action to a customer.

Learning objectives

- Create an email treatment
- Design visually appealing emails using templates
- Configure actions with re-usable action flows

Email Treatments

Offer emails play a crucial role in attracting customers as part of a campaign over the email channel. With Pega Customer Decision Hub™, you can use email treatments to design visually appealing email messages, and then send your offers to qualified customers in an always-on outbound environment.

In Pega Customer Decision Hub™, email treatments can be Internal or External.

Internal email treatments

You create internal email treatments and email accounts for initiating email distribution within Pega Customer Decision Hub. You can design the email content either in Pega Customer Decision Hub or in an external HTML editing software, such as Dreamweaver, and Stripo. However, the final email assembling happens in Pega Customer Decision Hub.

Pega Customer Decision Hub provides two common patterns for designing an internal email treatment:

- You can design the email content directly within the email treatment in Pega Customer Decision Hub. Use this pattern only when the email content is relatively simple and does not require any complex HTML design.
- Marketing departments can outsource email content designs to professional designing agencies who do not have direct access to Pega Customer Decision Hub. These agencies use HTML editors, such as Dreamweaver, to build visually appealing content. You can import the HTML with the externally designed email content directly into an internal email treatment.

For both scenarios, your Pega Customer Decision Hub instance requires a direct integration with an SMTP server to send the emails. When you run an outbound schedule and the system triggers emails, Pega Customer Decision Hub constructs the email content by replacing the placeholders with personalized data and then sends the content directly to the SMTP server.

With internal email treatments, you can use the email treatment forms to view the content, map placeholders, send test emails, and track impressions and clicks. You then internally assess the performance, throttling, and maintenance.

External email treatments

You create external email treatments in Pega Customer Decision Hub too, but the email content is mapped to a file or database template. Pega Customer Decision Hub writes an outbound schedule run results to a file or database table that is shared with a third-party email service provider for sending the outbound emails.

For external email treatments, Pega Customer Decision Hub does not store email content. In this common case, Pega Customer Decision Hub does not have direct integration with an SMTP server, but a third-party email service provider handles the service. These providers typically rely on file and database integrations and have a defined format of the data that they expect. Their environments host the email design.

When you use external email treatments you create output data from Pega Customer Decision Hub in the format that the integration demands. Typically, the output of the file or table consists of personalization data, a type of identifier that links the email treatment with a template that the service providers use, and additional identifiers to process the email responses that Pega Customer Decision Hub receives from the provider.

With external email treatments, Pega Customer Decision Hub only generates the data that is required to send the emails. The provider designs and sends the email messages and manages the performance and scaling of the whole process. Pega Customer Decision Hub requires additional integration to process the responses, update the interaction history, and train adaptive models.

Creating internal email treatments

Internal email treatments are created within Pega Customer Decision Hub. The email accounts used to initiate email sending are also configured in Pega Customer Decision Hub.

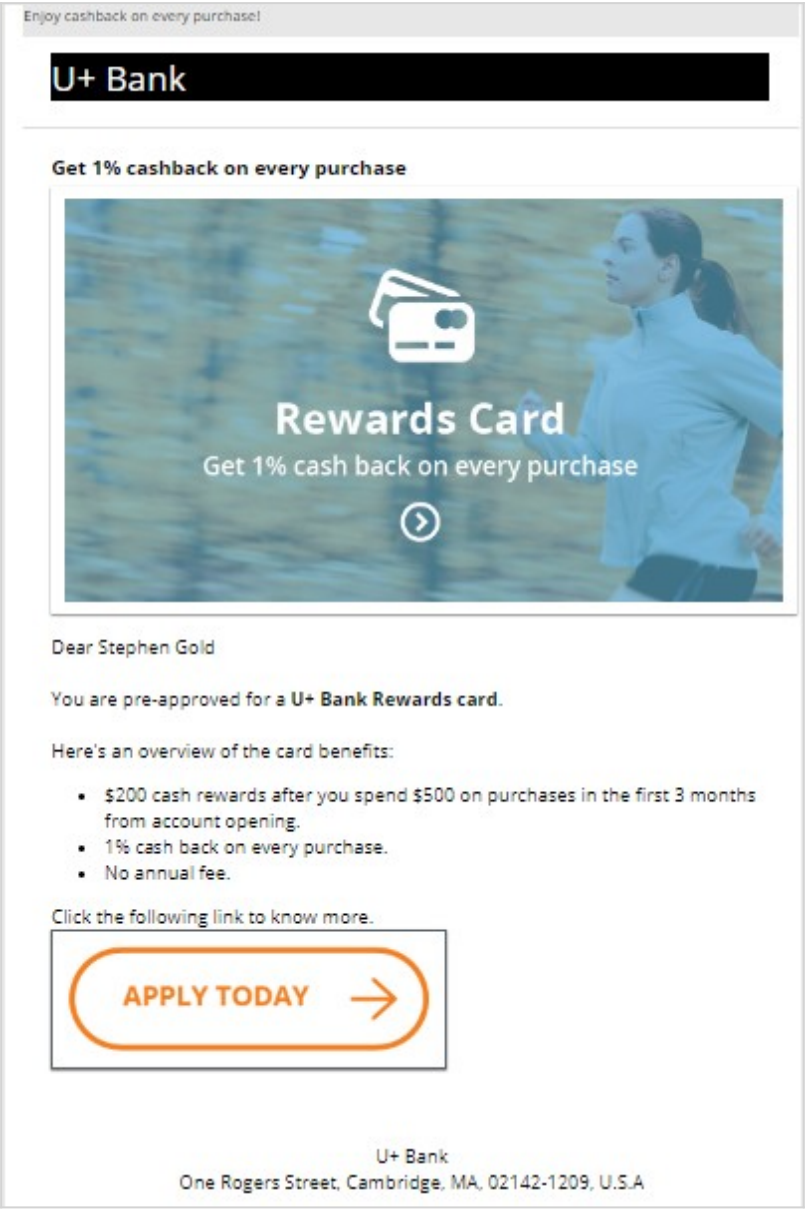
Internal email treatments can be designed and personalized in Pega or in an external tool.

Email content design and personalization in Pega

This demo shows you how to create an internal email treatment and send emails using Pega to present offer details in an email.

U+, a retail bank, wants to promote their Rewards credit card via email. They want to send the email to qualified customers in an always-on outbound environment.

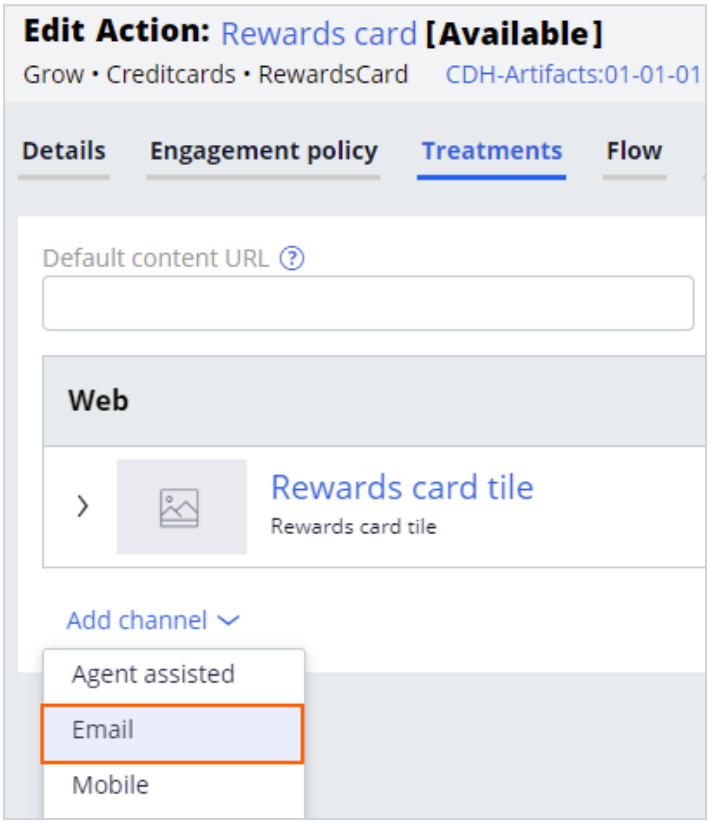
The email is personalized and contains the offer details and a call to action. When customers click the **APPLY TODAY** call to action in the email, they are directed to the credit cards page on the bank's website to learn more about the offer and apply for it if interested.



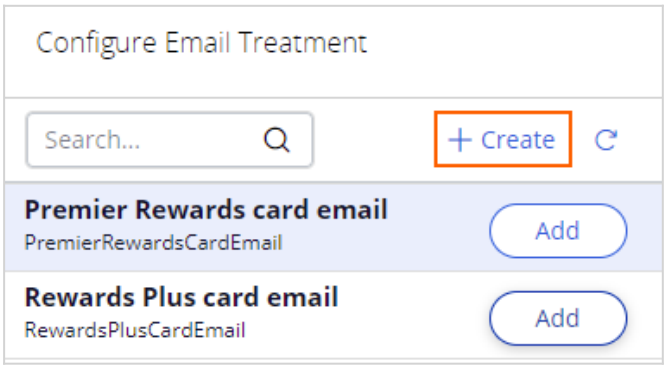
This is Pega Customer Decision Hub™ portal. To send emails in an always-on outbound environment, you need to add an email treatment to every action that you want to promote through email. An email treatment contains the message that you want to communicate to customers.

In this case, you create and add an email treatment to the Rewards card. Open the Rewards card to add new treatments to the **action**.

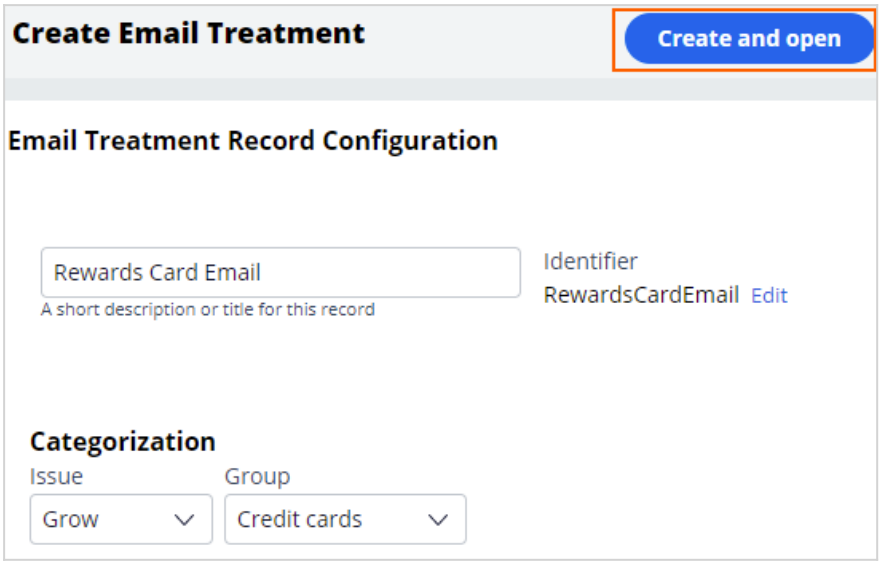
You can manage treatments associated with an action on the **Treatments** tab. To associate a treatment with an action, click **Add channel**.



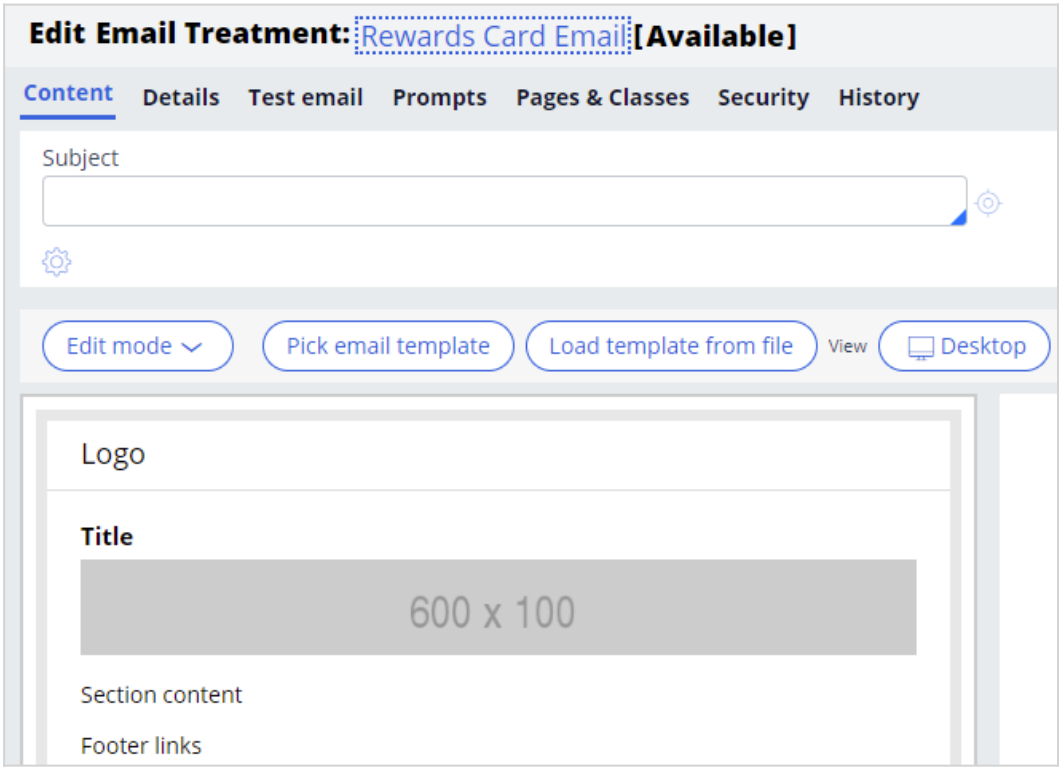
You can use an existing email treatment or create a new one. In this case, you want to create a new internal email treatment.



Now, enter an appropriate **short description** to create the new treatment. It is a best practice to create the treatment in the same issue/group hierarchy in which you plan to use it; this will make the treatment easier to access and manage.



Then, enter the email content.



First, enter the email subject. You can include both static text and dynamic placeholders in the subject.

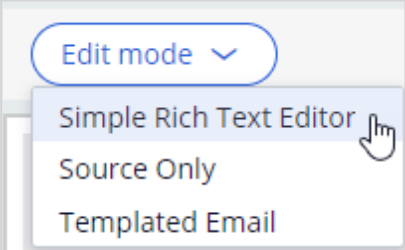
To access dynamic placeholders, start typing dot followed by Customer to access customer properties or OfferData to access action properties.

Dynamic placeholders allow you to personalize the subject. You can construct the placeholders with both customer and offer attribute properties.

At runtime, the properties are replaced with the real values. For example, if the customer's first name is *Stephen*, the generated subject line reads: *Hi Stephen, here's your U+ Bank card*.

Then, in the **Details** tab, enter an appropriate keycode. When the **Track Email Open Rate** option is enabled, the system records an impression when a customer opens an email.

In the **Content** tab, you can design the email using one of the three edit modes: Simple Rich Text Editor, Source Only, and Templated Email.

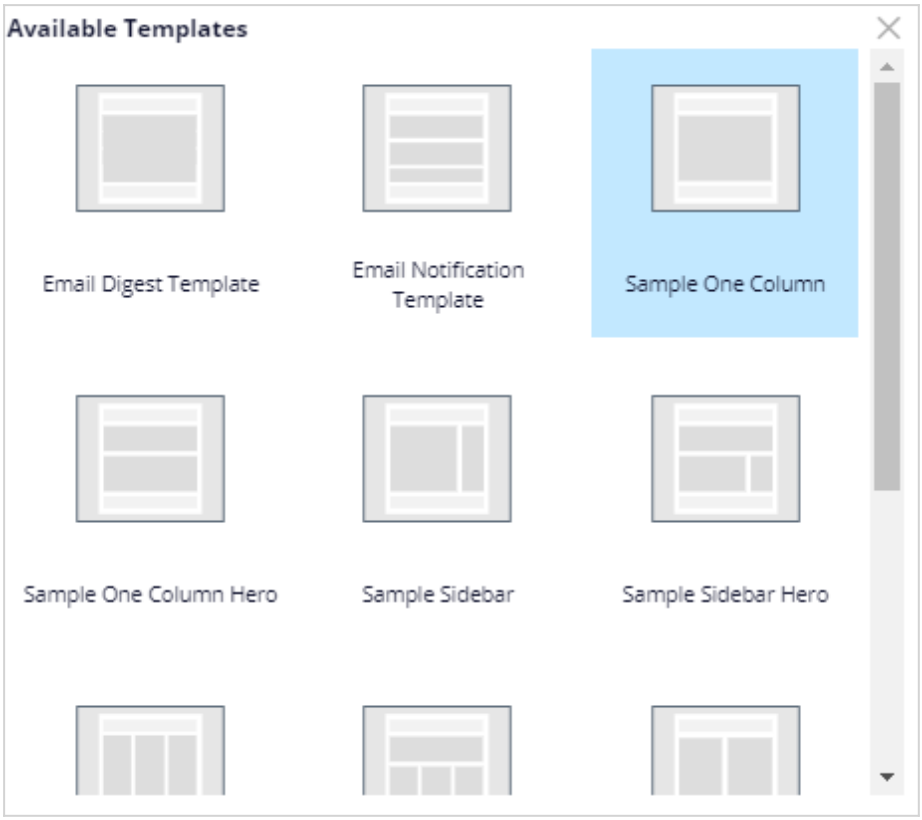


The **Simple Rich Text Editor** provides a blank page with a rich text editor, which allows you to compose an email manually.

The **Source Only** mode allows you to work with HTML content only. If the content is designed in an external tool, you can copy and paste the HTML content in this mode.

The **Templated Email** mode provides you with several easy-to-use templates for designing appealing emails; this is also the default mode.

These are the available template options.



In this case, you use the default **Simple One Column** template.

The **Simple One Column** template contains four sections: Preheader, Header, Body, and Footer.

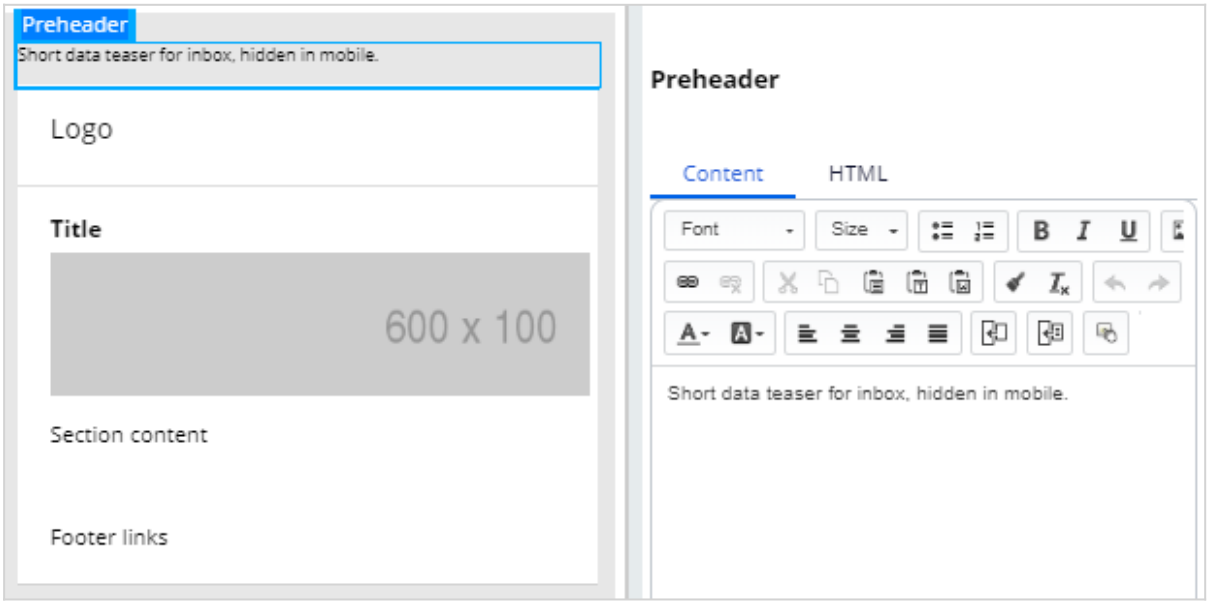
The Preheader section can contain a short **data teaser for inbox** that is intended to persuade customers to read the email further. This text is hidden on a mobile device.

The Header section can contain the organization's logo.

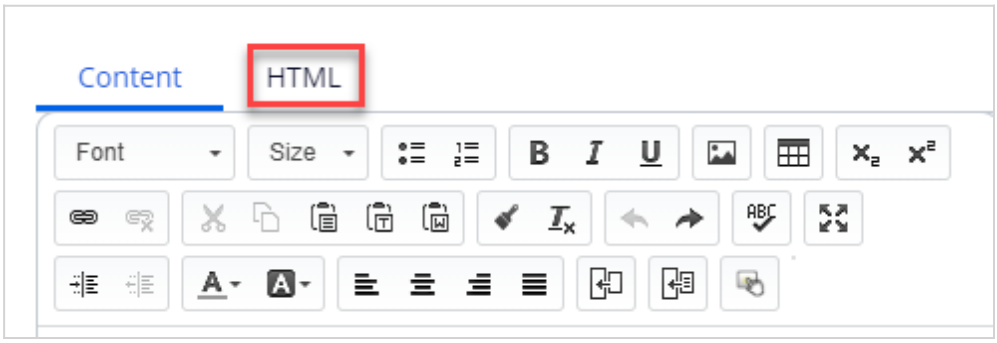
The Body section contains a placeholder for a title, image, text, or buttons as required. This section is where the main content goes.

The Footer section can contain contact details or links, if any.

When you click on the different placeholders or sections in the template, an editing pane is displayed on the right side of the screen.

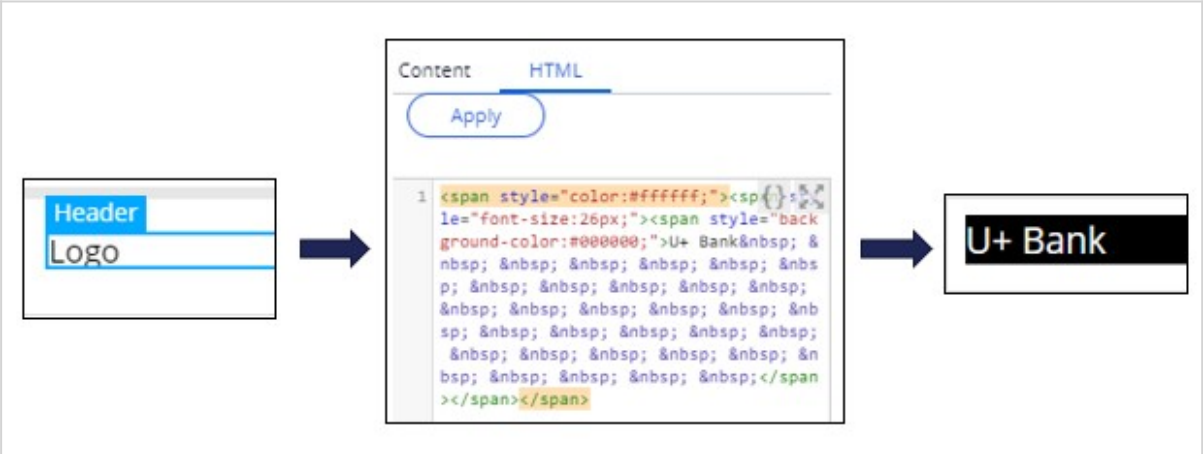


This editor also allows you to copy and paste HTML content from other tools using the **HTML** tab.



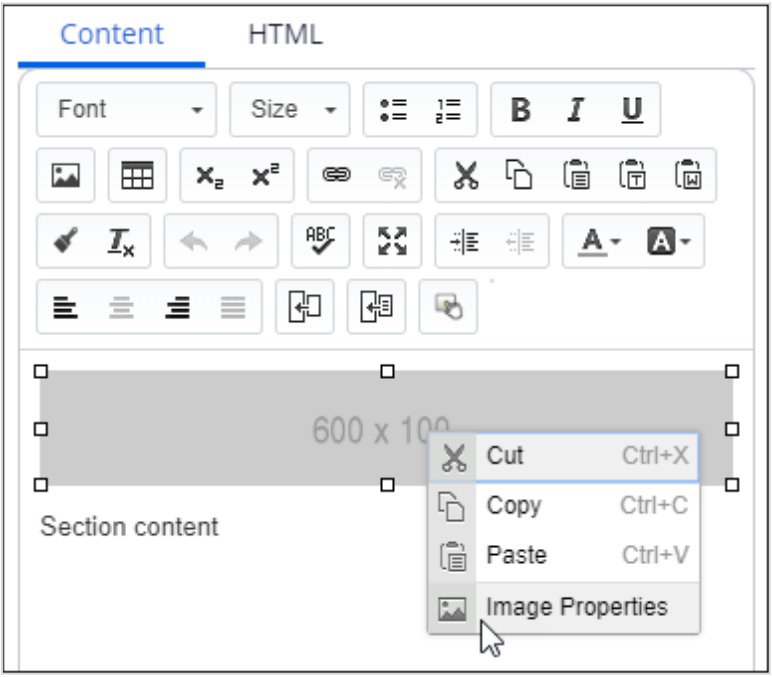
For example, here is how you can create an HTML version of the U+ Bank logo by using HTML code.

While composing the section, you can see the preview on the left.

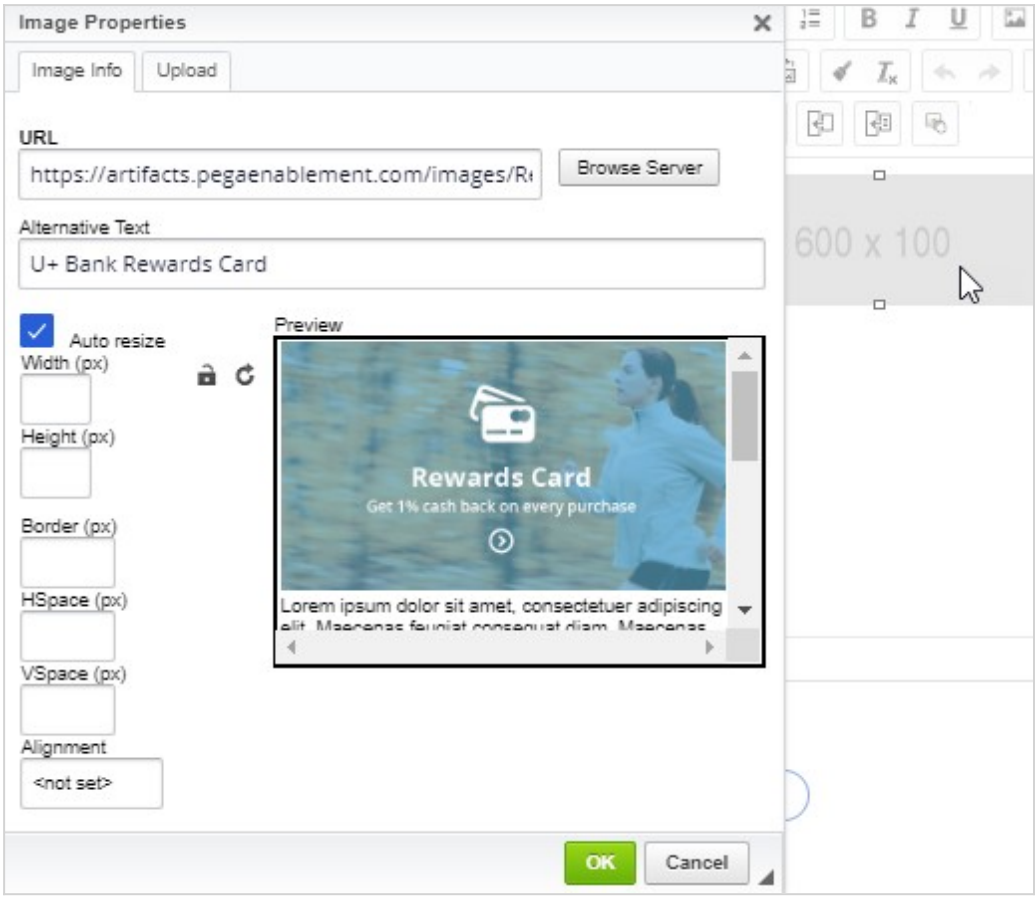


You can also add a title to the email.

To add an image, you can open the image placeholder, which opens the **Image Properties**.



In the **Image Properties,** you can reference an image from a content server.



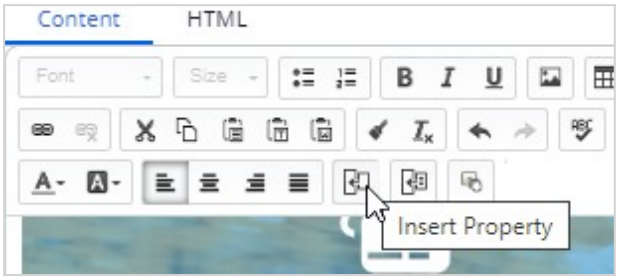
It is best practice to host an image on an external server and reference it in the email. Do not embed images directly in the email, as it makes the email bulky.

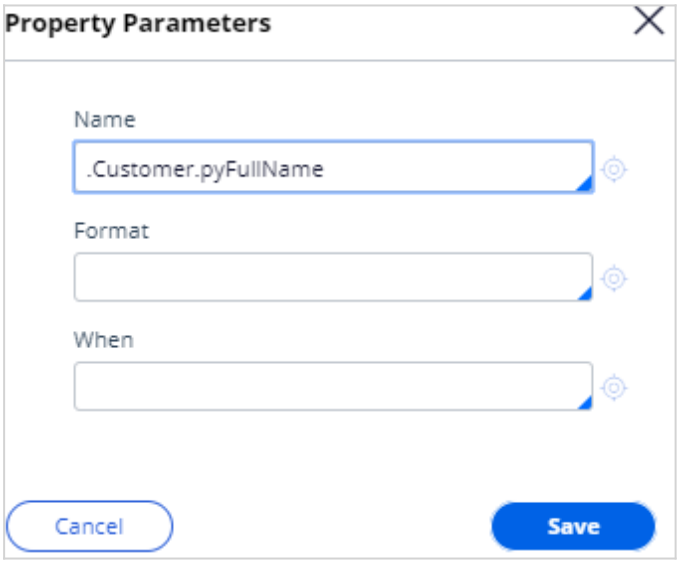
In the email content, you can add static content and dynamic placeholders to personalize the message.

For example, the property **.Customer.FullName** can be added as a placeholder. The customer's real full name will replace the placeholder at the time of email delivery.

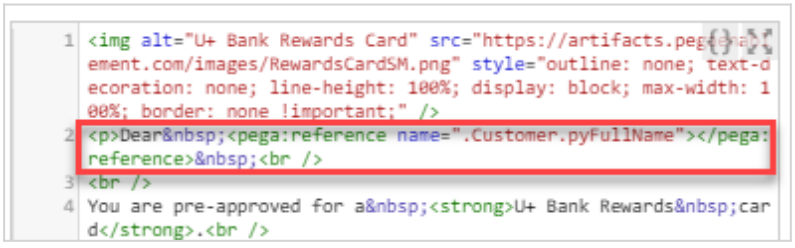
```
Dear <<.Customer.FullName>>
```

To add a customer or offer attribute as a dynamic placeholder, use the **Insert Property** button.





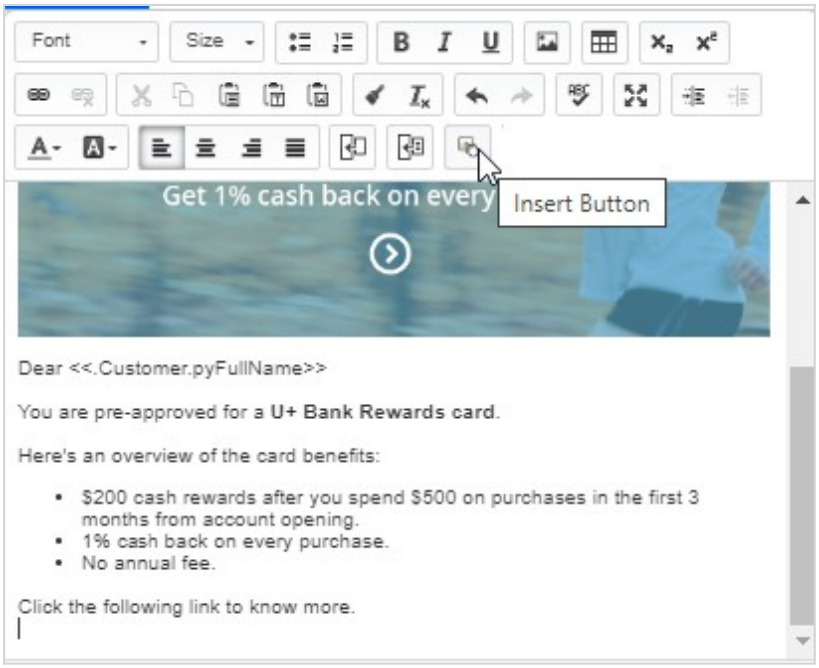
Any property that you add in an email treatment has an equivalent Pega markup tag (**pega:reference)** to reference customer or offer attributes. After you insert the property, you can view the tag (which is automatically added) in the **HTML** tab. When you design the email in an external application, you can use these tags to add dynamic placeholders, so the personalization works when you import the HTML into the email treatment.



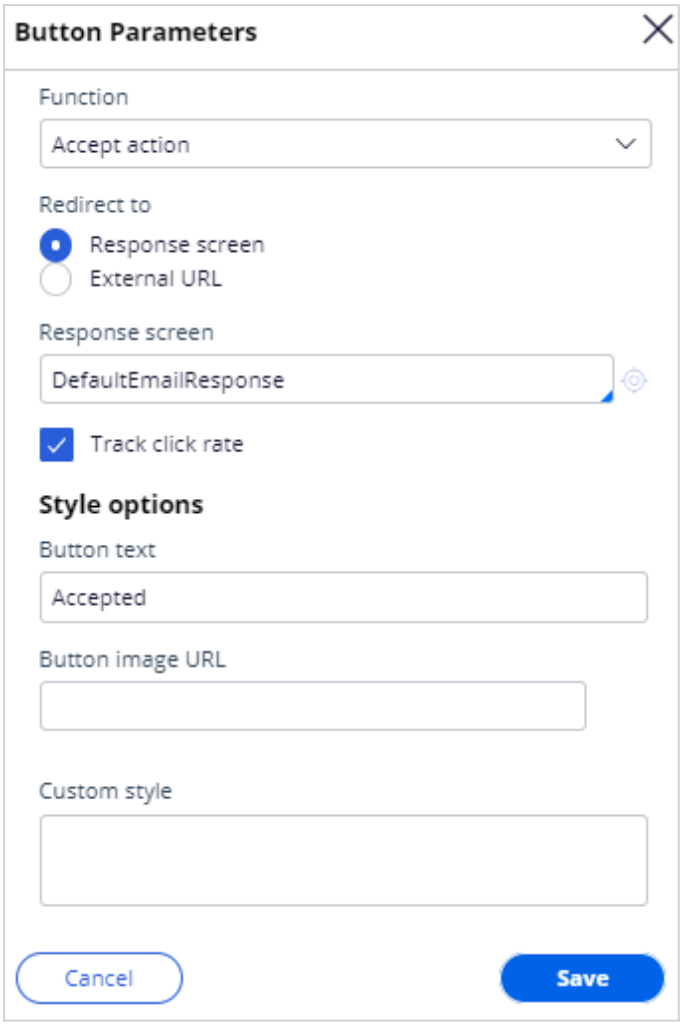
Note that to add an offer attribute, you can add a dynamic placeholder, which is then replaced with the offer attribute at the time of email delivery. For example, you can use <<.OfferData.pyLabel>> to reference the offer attribute.

In this case, you may want to replace U+ Bank card names with an offer attribute by using the <<.OfferData.pyLabel>> placeholder.

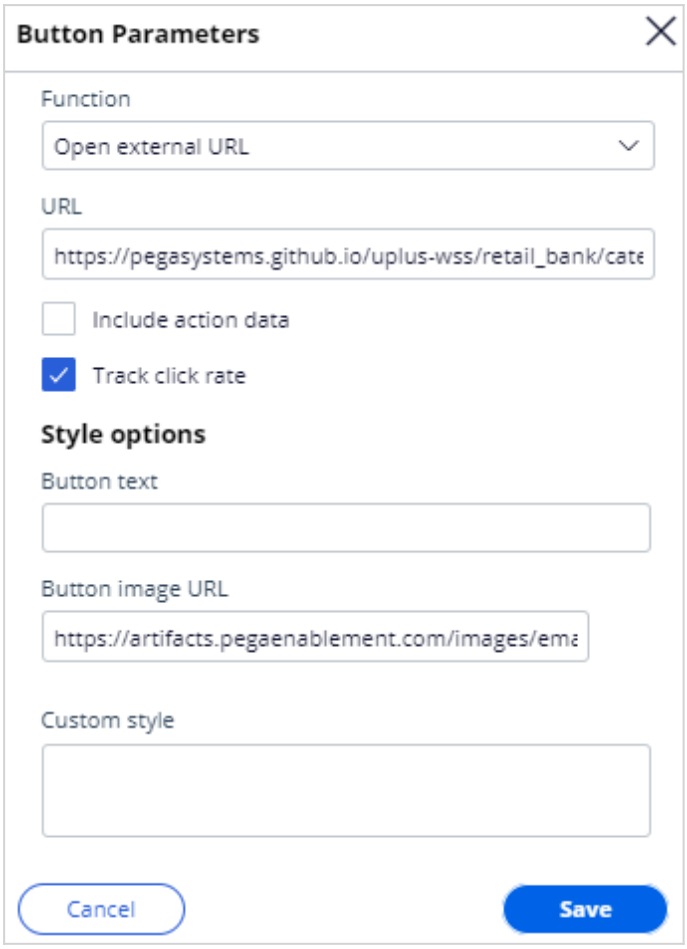
You can also add links or buttons that the customer can click to respond to an offer or view more details. In this case, you add an **APPLY TODAY** call to action button.



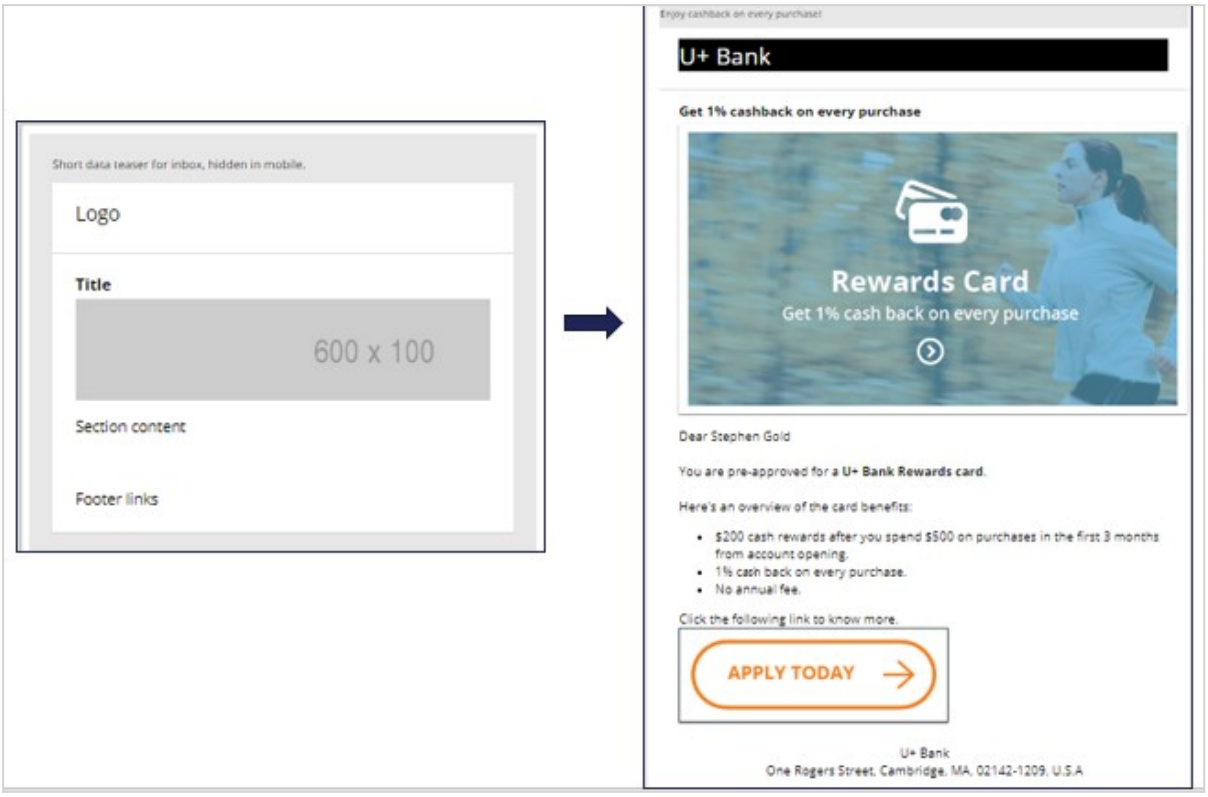
In the **Button Parameters**, the **Function** drop-down menu lists the possible functions that you can assign to a button.



Now, select **Open external URL** and provide an external URL that opens when the customer clicks the button. Then, provide the button image URL.



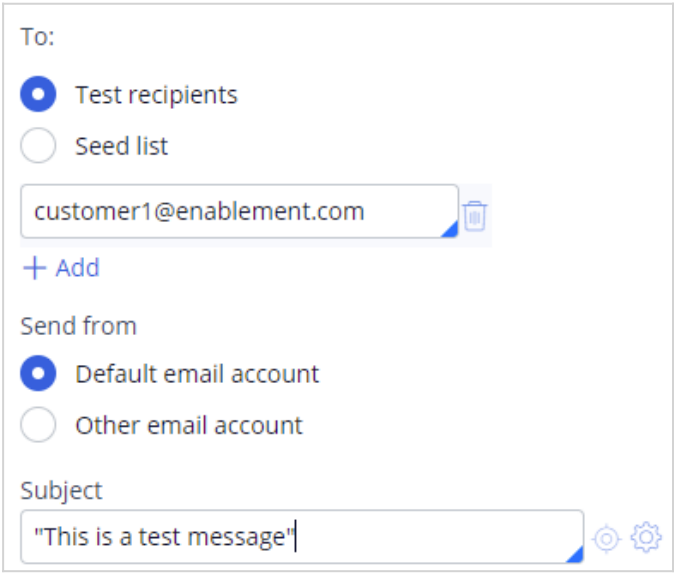
A composed email looks like this.



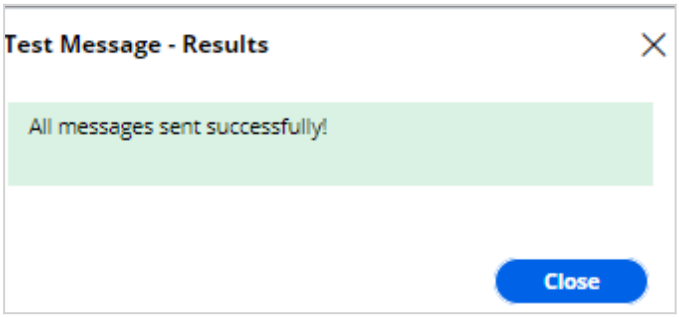
Now, save the treatment and add it to the Rewards card action.

You can send the email to test accounts or to yourself to test the visualization and rendering of the content on various email clients.

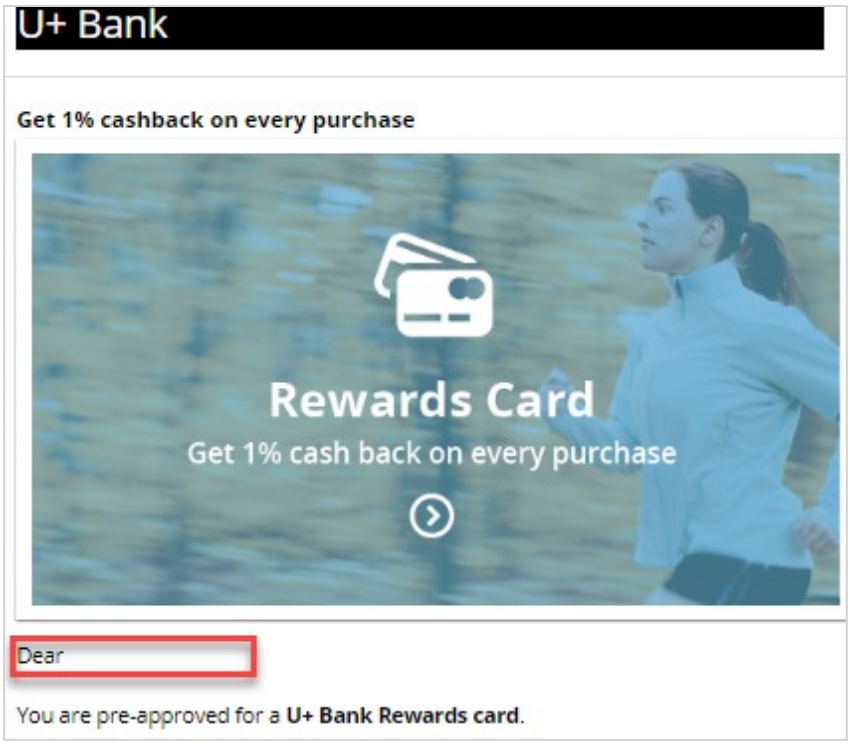
To test the treatment, switch to the **Test email** tab. In this tab, you can specify the target email addresses and the email subject specifically for the test.



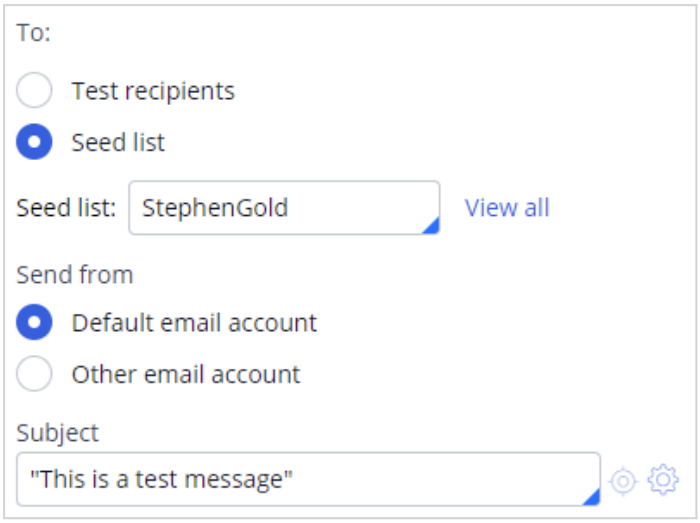
To test the treatment, click **Send test email**. Once the test is complete, you can check the emails in the email client.



Note that none of the attribute placeholders are populated when you manually enter the recipients' email address. However, you can test the functionality of the buttons and links.



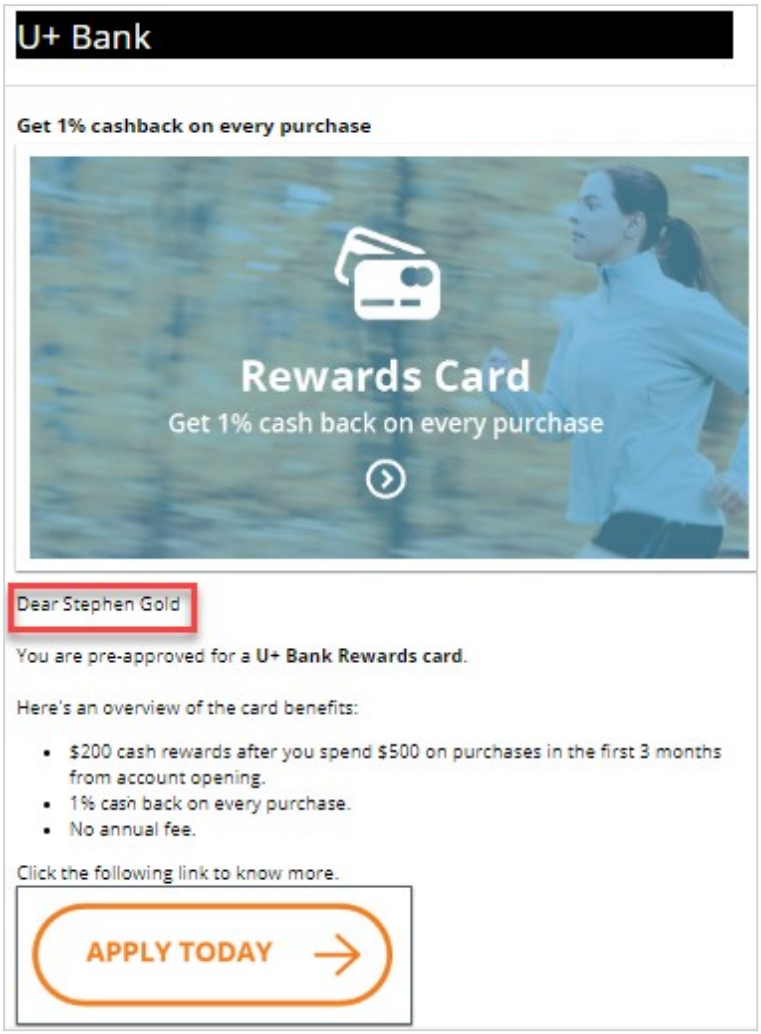
To populate the attribute placeholders, you can use a **seed list** as test input.



A seed list contains test customer data. It contains values for customer attributes, including email addresses.

When using a seed list to test the Treatment, the dynamic placeholders are replaced with customer information from the seed list.

Note that the customer name placeholder is replaced with the data from the seed list.



This demo has concluded. What did it show you?

- How to add an email treatment to an action
- How to use dynamic placeholders to populate the customer and offer attributes in an email treatment
- How to use HTML code to generate content in an email treatment
- How to use an image from an external server in an email treatment
- How to add a button to an email treatment
- How to send emails to test accounts to test the visualization and rendering of the email content
- How to use seed lists to test the dynamic placeholders

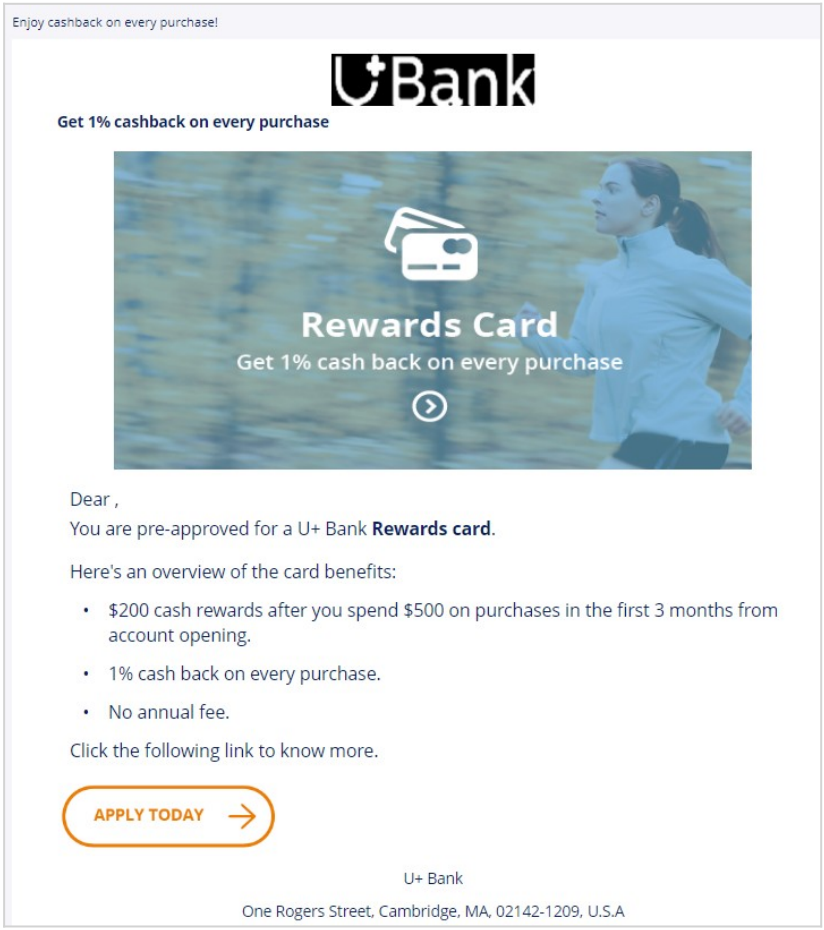
Email content design and personalization in an external tool

This demo shows you how to personalize email content that you create in an external tool and use an SMTP server to send emails from Pega Customer Decision Hub.

Pega Customer Decision Hub comes with the capabilities to create and personalize email content to present offers to customers. However, your organization can use an external tool, such as Dreamweaver, to design and customize email content based on your requirements.

In this example, you will learn how to personalize an email treatment in an external tool and use an SMTP server to send emails from Pega Customer Decision Hub™.

This is the email treatment that was designed in an external tool and the corresponding HTML code.



When you design email in an external tool, you can use Pega markup tags to add dynamic placeholders so that your personalizations work when you import the HTML into Pega

Customer Decision Hub. In this example, the *Pega:reference* markup tag refers to a customer property, Customer FullName.

```
Dear <pega:reference name=".Customer.FullName"></pega:reference>,
```

After completing the email treatment design and personalization, you can create a new internal email treatment for an action, and then load the email content that you designed externally into that treatment. Now, save the treatment and add it to the action.

You can send the email to test accounts or to yourself to test the visualization and rendering of the content on various email clients. Check the email in the email client. Note that the data from the seed list replaces the customer name placeholder.

You have reached the end of this demo. What did it show you?

- How to reference Pega Platform properties in email content that you design in an external tool.
- How to import email content from an external tool into Pega Customer Decision Hub.

Defining the action flow

Business scenario

U+, a retail bank, has designed a new email treatment to promote the Rewards Card offer. Now, an action flow must be created to ensure that the email is delivered when this action is selected for a customer.

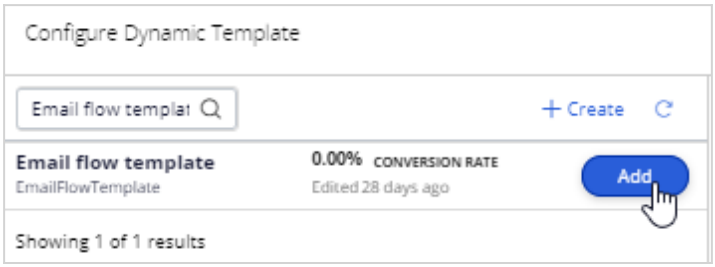
Action Flow

The action flow is a flow diagram that contains the sequence of steps carried out during the lifecycle of an action. These steps include delivering the action message via an outbound channel, waiting for a response, updating the Interaction History, sending a follow-up message, and so on. In a flow, each of these steps is represented by a variety of shapes. Best practice is to keep the flow short and simple, preferably not more than 2 or 3 steps per channel. Every additional step taken in the action flow is a missed opportunity to let the Pega brain decide the Next-Best-Action.

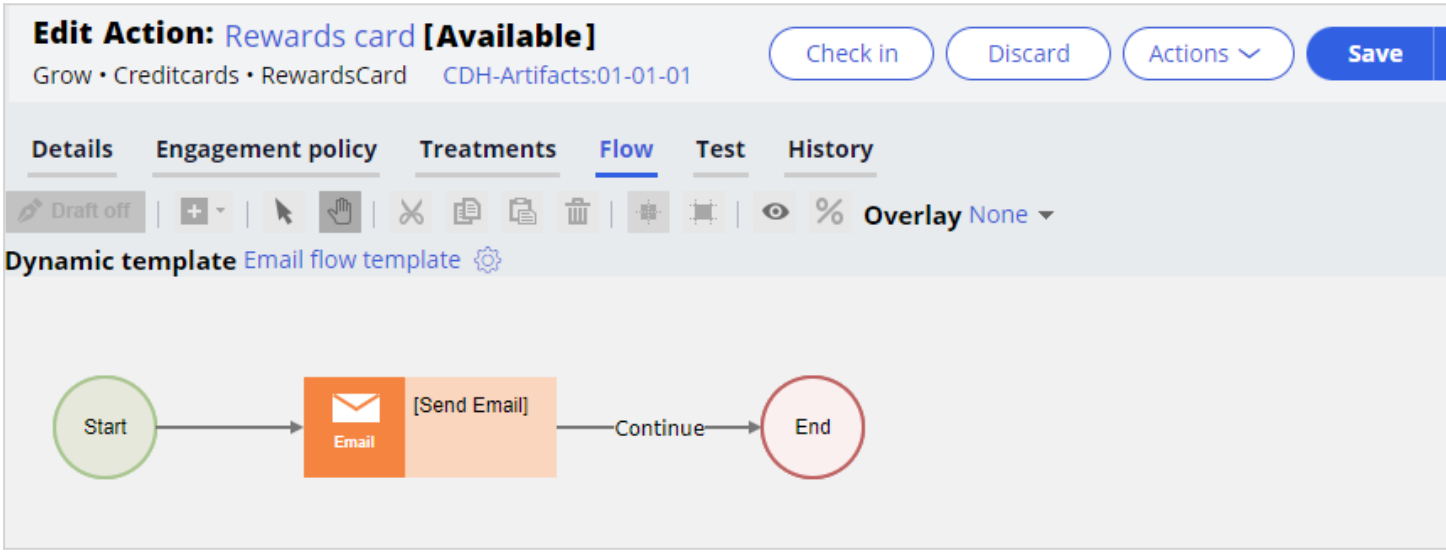
A new action contains only the default **Start** and **End** shapes. To send emails in an always-on outbound environment, you need to add a **Send Email** shape to the action flow.

When there are several actions that need the same flow pattern, you can create that flow pattern once and reuse it for multiple actions using the **Dynamic template** option.

In the **Configure Dynamic Template** window, select the action that contains the desired flow pattern.



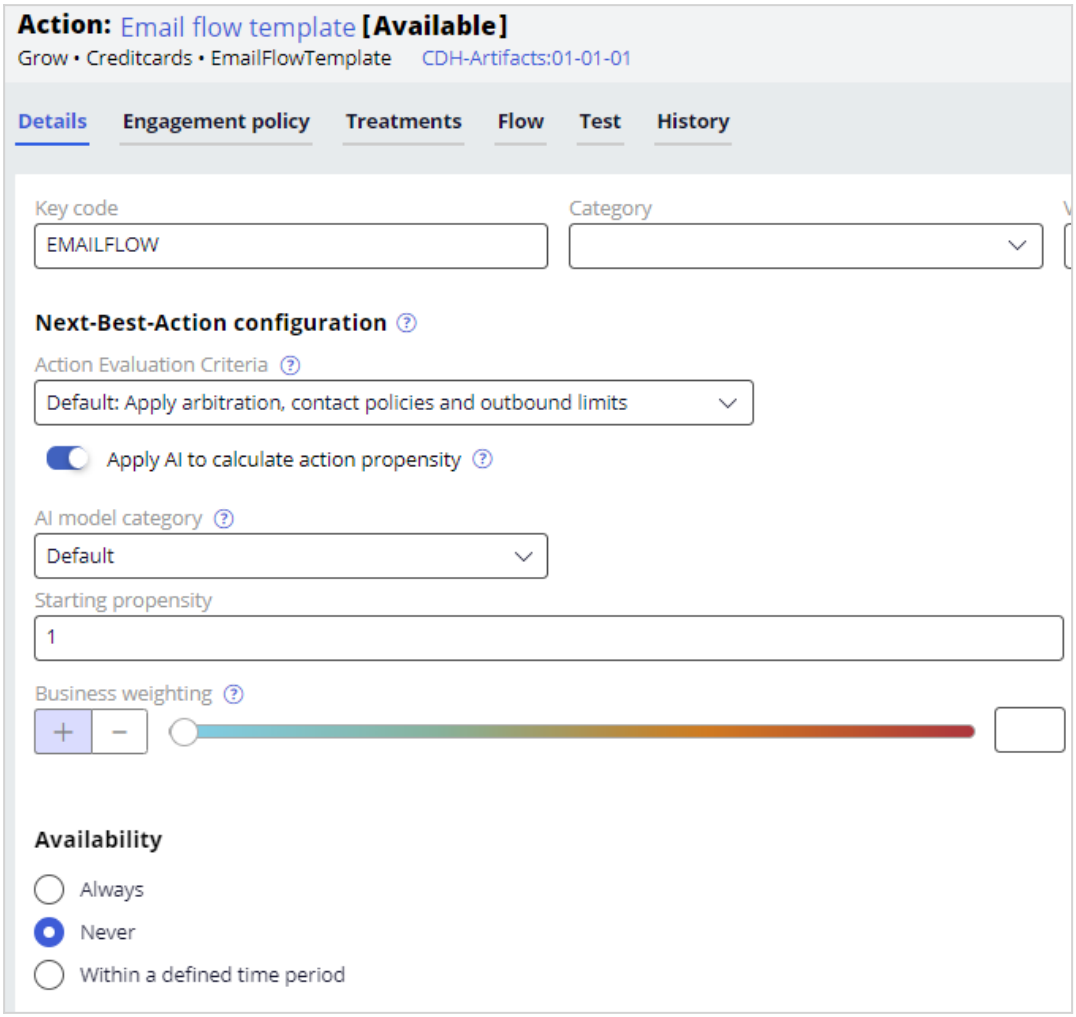
When you use the **Dynamic template** to configure the flow, you cannot change the flow in the referenced action. To edit the flow, you must edit the original action in which the flow was defined.



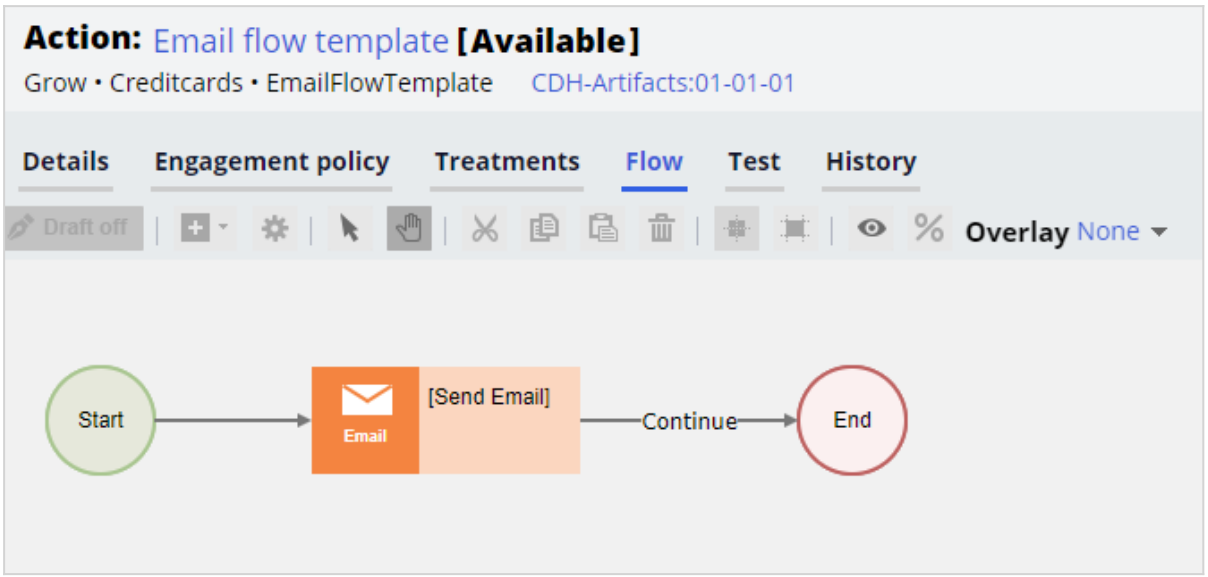
Basic email flow template

Let's look at a basic flow pattern for email delivery.

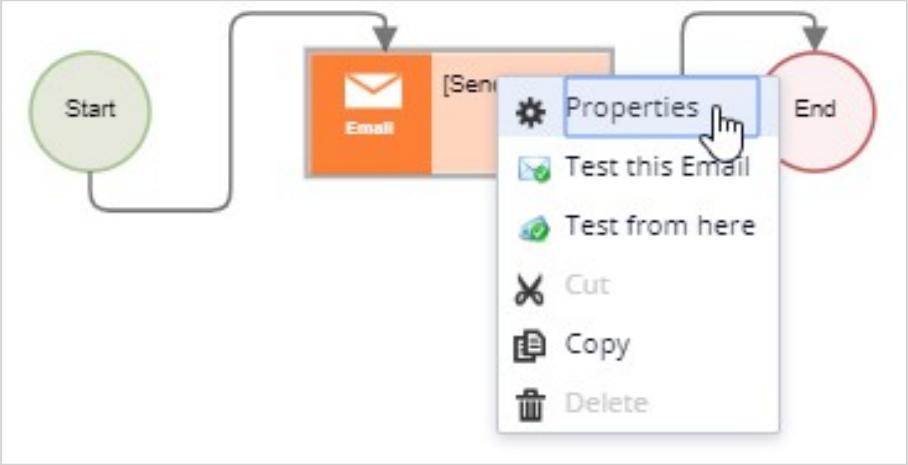
A flow template is just a normal action with the flow configured. In the following example, an action is used as a flow template within other actions to enable them to send emails. Thus, the **Availability** of the action is set to ***Never*** to prevent it from being presented to customers.

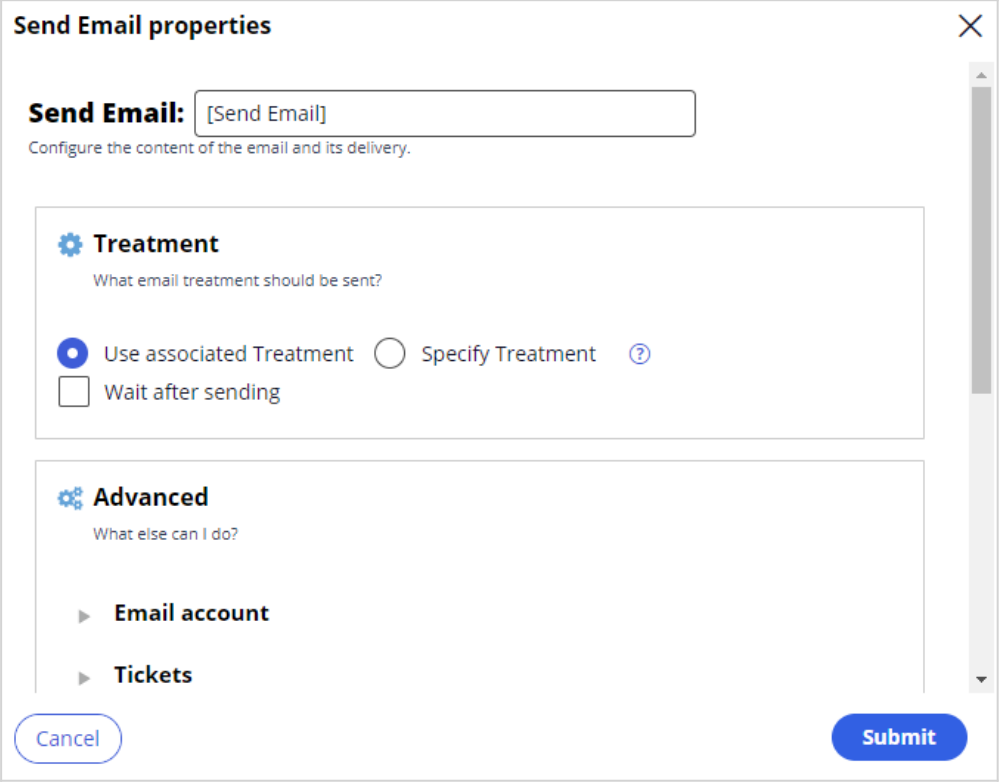


The **Send Email** shape in the flow typically references the email treatment that contains the email content to be sent.



However, when you want the flow to be used as a template, you want the treatment belonging to the individual action to be used rather than a standard email treatment. In the **Send Email** shape, set the **Treatment** option to **Use associated treatment** to ensure that the treatment from each action, as selected by the Next-Best-Action decision, is used to send emails, instead of standard treatment.





This ensures that the email treatment is independent of the flow template associated with the action. For example, when the Rewards Card uses the **Email flow template** as its **Dynamic flow** template, the Rewards Card email treatment will be used for sending the email.

Avoiding overexposure of actions on outbound

Description

Contacting a customer too frequently can have a negative impact on the customer's attitude toward further actions by your company. Learn how to define contact limits and use suppression policies to pause actions for a given time period based on past customer behavior.

Learning objectives

- List the types of contact policies
- Explain how to avoid overexposure of actions using contact limits and suppression policies

Contact policy types

Types of constraints

Too many contact attempts over a short period of time can have a negative impact on a customer's attitude toward further actions by your company. To maximize the lifetime value of every customer relationship, organizations must prevent outreach fatigue by optimizing the number of actions taken.

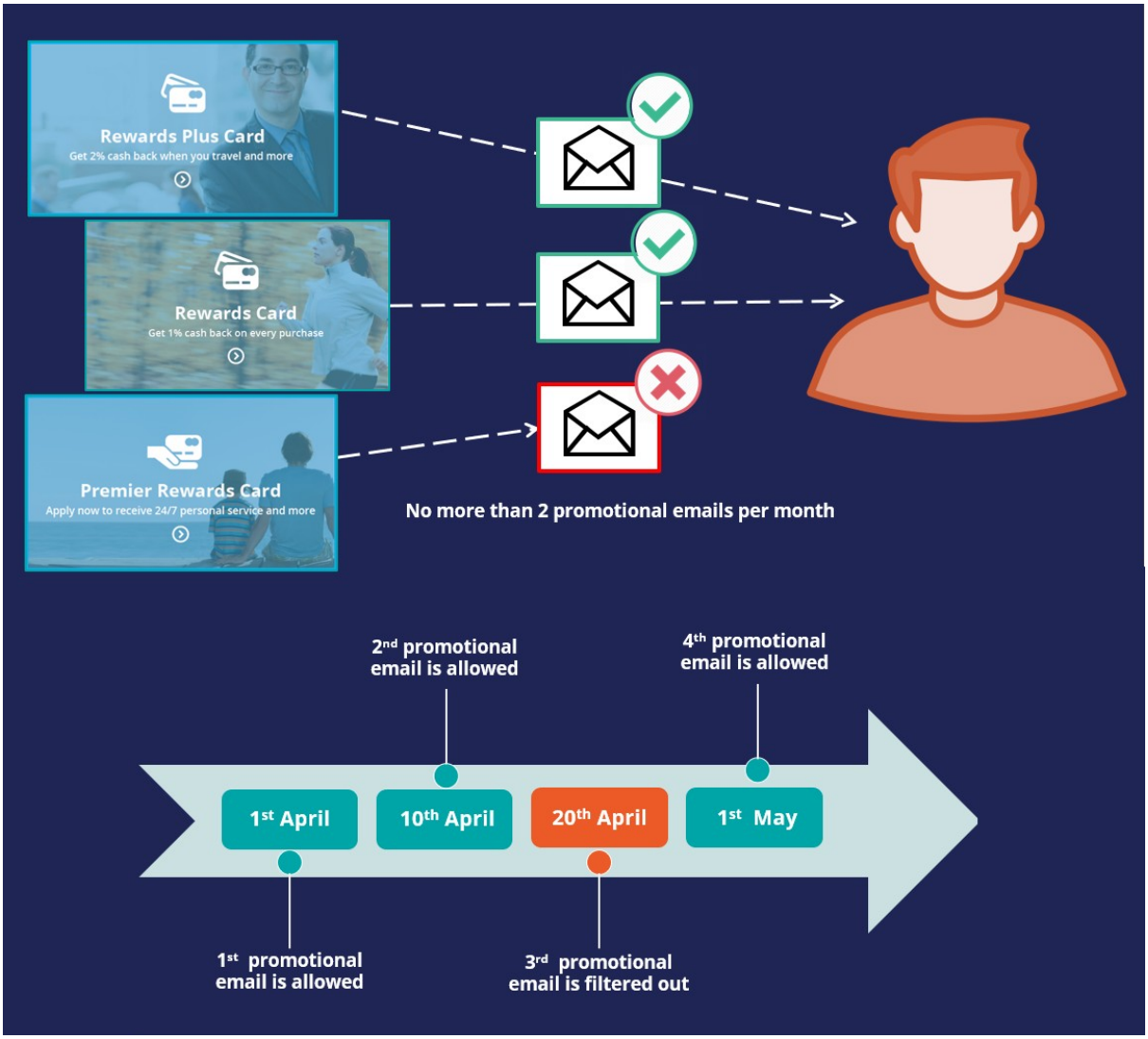
In Pega Customer Decision Hub™, there are two types of contact limits that allow you to limit actions over a given period of time.

1. Customer contact limits
2. Suppression policies

Customer contact limits

Customer contact limits allow you to limit the number of actions that a customer can receive over a given period of time on a specific channel. These customer contact limits prevent an action from reaching a customer on a specific channel, irrespective of past responses to that action by the customer.

For example, you can decide that you do not want your customers to receive more than two promotional emails per month.

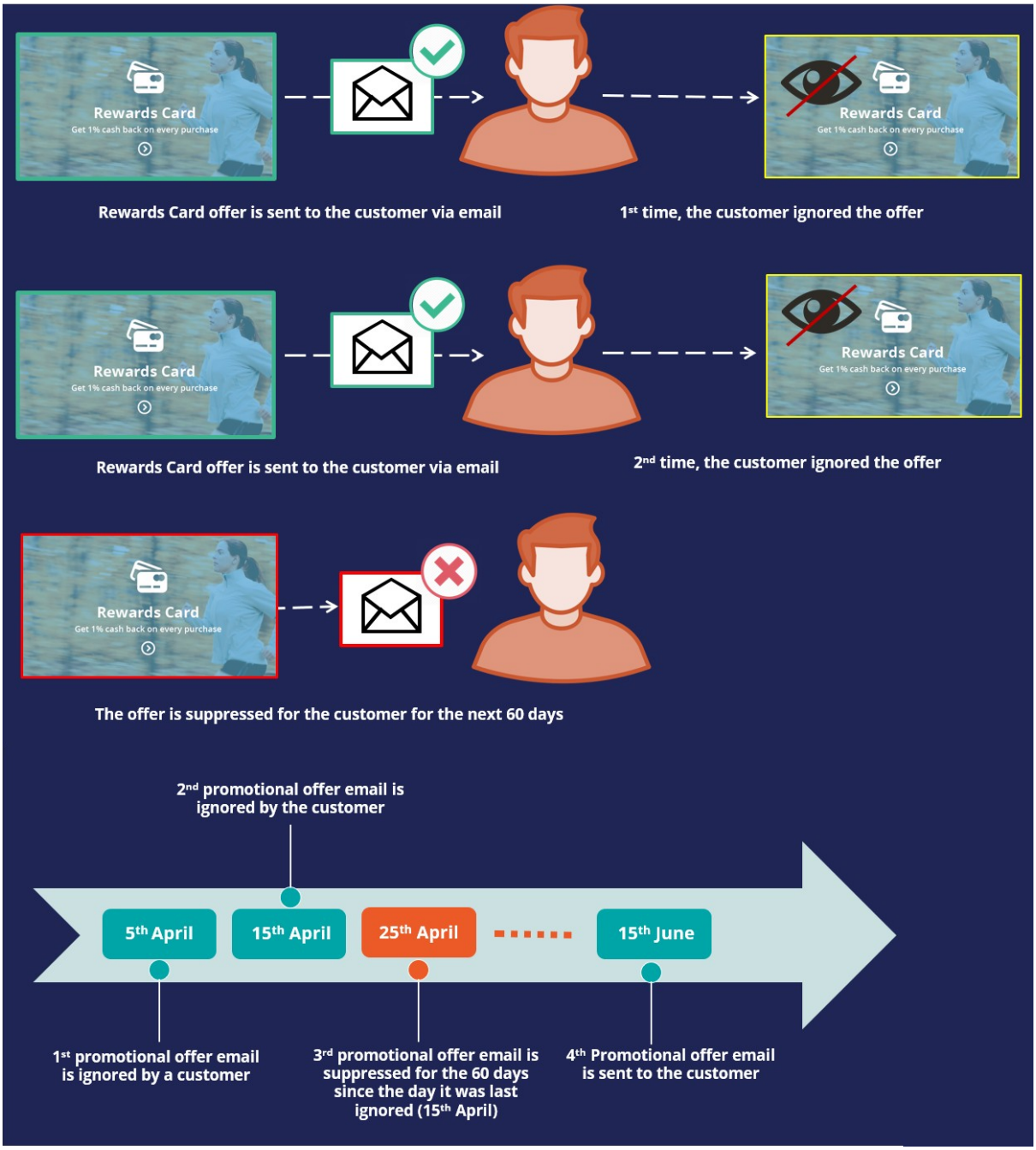


Suppression policies

Suppression policies determine when and for how long an action or group of actions should not be shown to a customer. These suppression policies put an action on hold after a specific number of outcomes are recorded for some or all channels.

Suppressing or pausing an action prevents oversaturation by limiting the number of times a customer is exposed to the same action.

For example, if a customer ignores a credit card promotional offer email twice in the previous 30 days, then the same credit card offer should not be sent to the customer again for the next 60 days.


Rewards Card
Get 1% cash back on every purchase
Rewards Card offer is sent to the customer via email
1st time, the customer ignored the offer
Rewards Card
Get 1% cash back on every purchase
Rewards Card offer is sent to the customer via email
2nd time, the customer ignored the offer
Rewards Card
Get 1% cash back on every purchase
The offer is suppressed for the customer for the next 60 days
2nd promotional offer email is ignored by the customer
5th April
15th April
25th April
15th June
1st promotional offer email is ignored by a customer
3rd promotional offer email is suppressed for the 60 days since the day it was last ignored (15th April)
4th Promotional offer email is sent to the customer

Avoid sending the same action for a time period

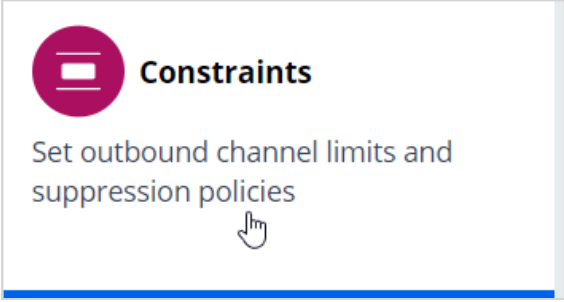
Business scenario

U+ Bank's marketing department currently promotes various credit card offers by sending emails to qualified customers.

Now the bank wants to implement a new set of requirements: they want to limit the number of emails sent to their customers to two per month. Also, the bank wants to avoid sending a credit card offer via email for 60 days if one was sent in the past 30 days.

Updating constraints

On the Next-Best-Action Designer **Constraints** tab, you configure outbound channel limits and suppression policies.

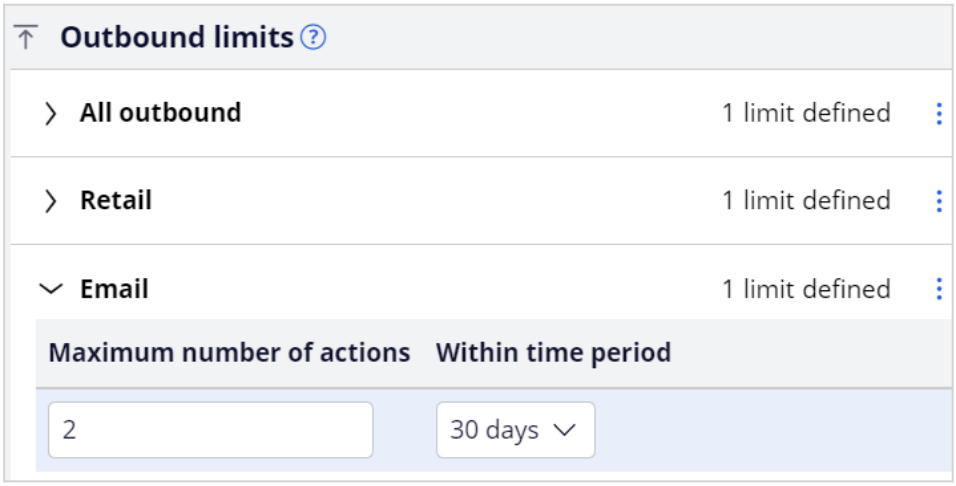


Edit **Constraints** to modify the limits.

Updating customer contact limits

To limit the number of outbound interactions that a customer can receive over a given period of time on a specific channel, you need to set customer contact limits.

In this scenario, the bank wants their customers to receive no more than two emails per month. So, you need to update the existing customer contact policy for the email channel to two emails per month.



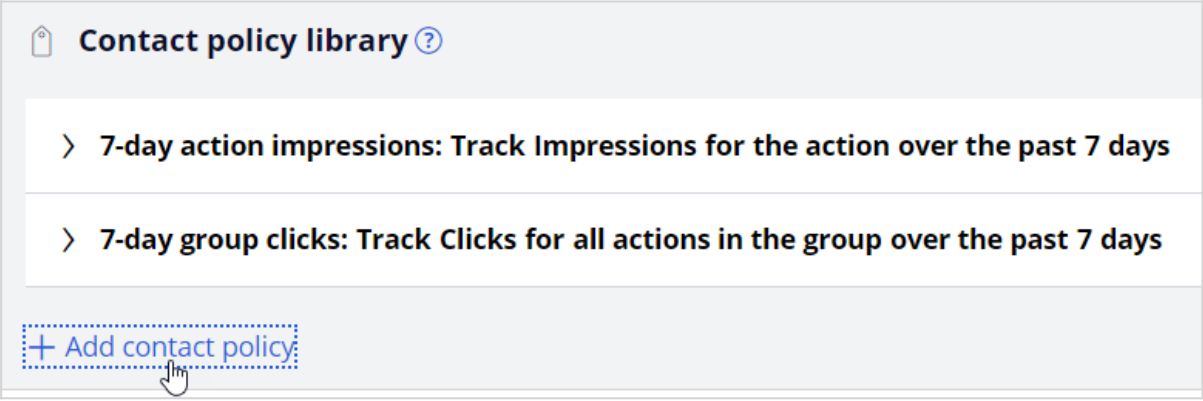
In the contact policy, you can update current limits or add new channel limits.

> Note: You cannot repeat a channel in a contact policy.

Defining suppression policies

To suppress a single action or a group of actions for a limited time period, you need to define suppression policies.

In this scenario, the bank wants to avoid sending promotional emails related to a credit card offer for 60 days if one was sent in the past 30 days. So, you need to add a contact policy to put an action on hold for 60 days.

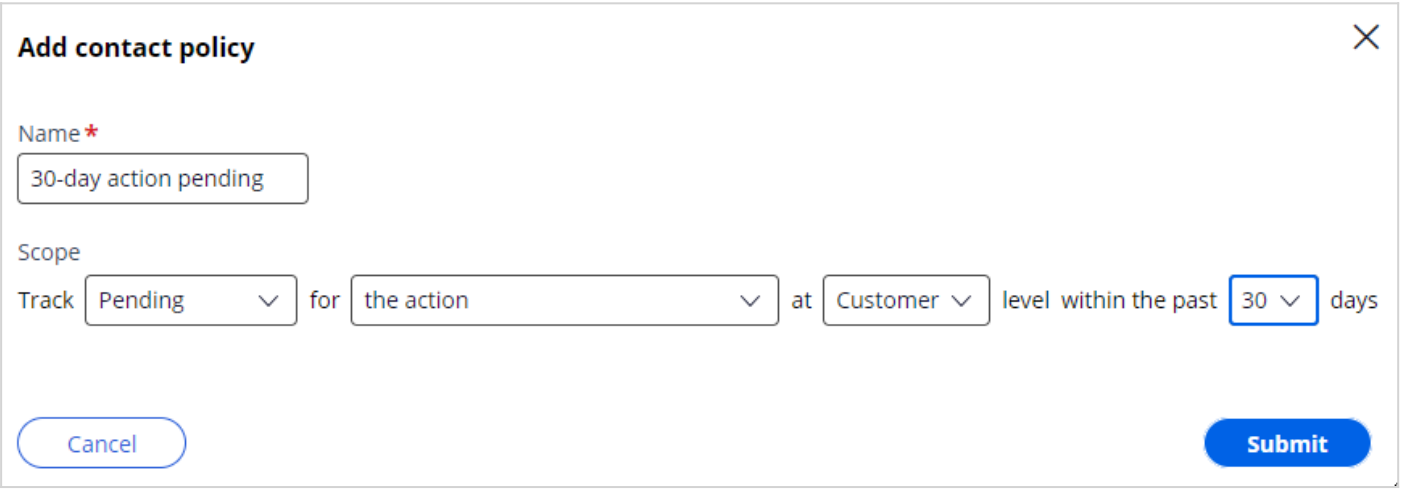


When an email is sent, a record is added to the Interaction History with the outcome value ***Pending***.

Provide a name for the new contact policy and then select the type of outcome it will track; in this case it will track outcomes with the value ***Pending***.

You can specify whether the responses are tracked for one specific action, or for all actions in the group. Track the responses at the action level, since you want to suppress only credit card promotions in email. You can also track the responses at context level.

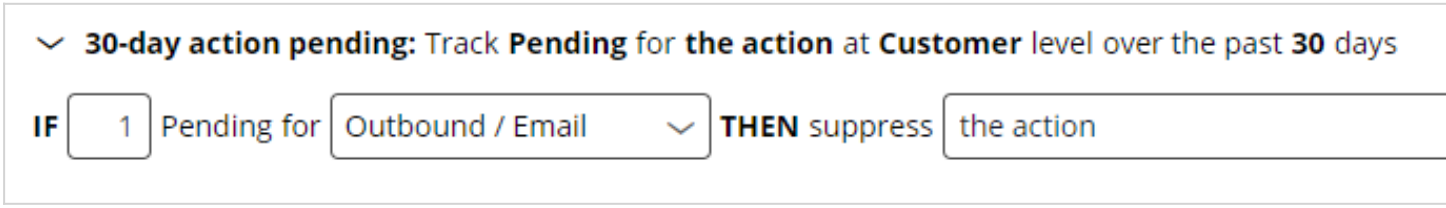
You can select the time period over which the responses should be tracked. In this case, responses should be tracked for the past 30 days.



The business requirement is to suppress the action for 60 days if an email was sent in the past 30 days. In other words, if there is even one pending response for the email treatment

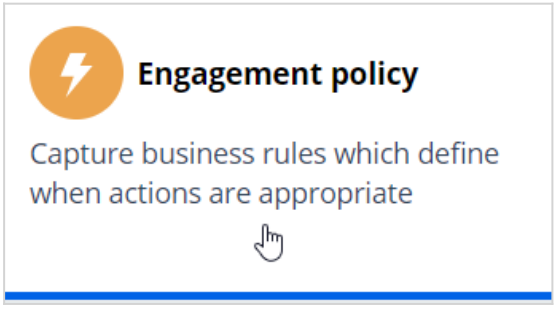
over the past 30-day period, the action must be suppressed. So, you need to enter the number of responses required to fulfill the suppression criteria as 1.

Then you need to select the channel for which the responses are tracked and enter the number of days for which an action should be paused when the suppression criteria are met.

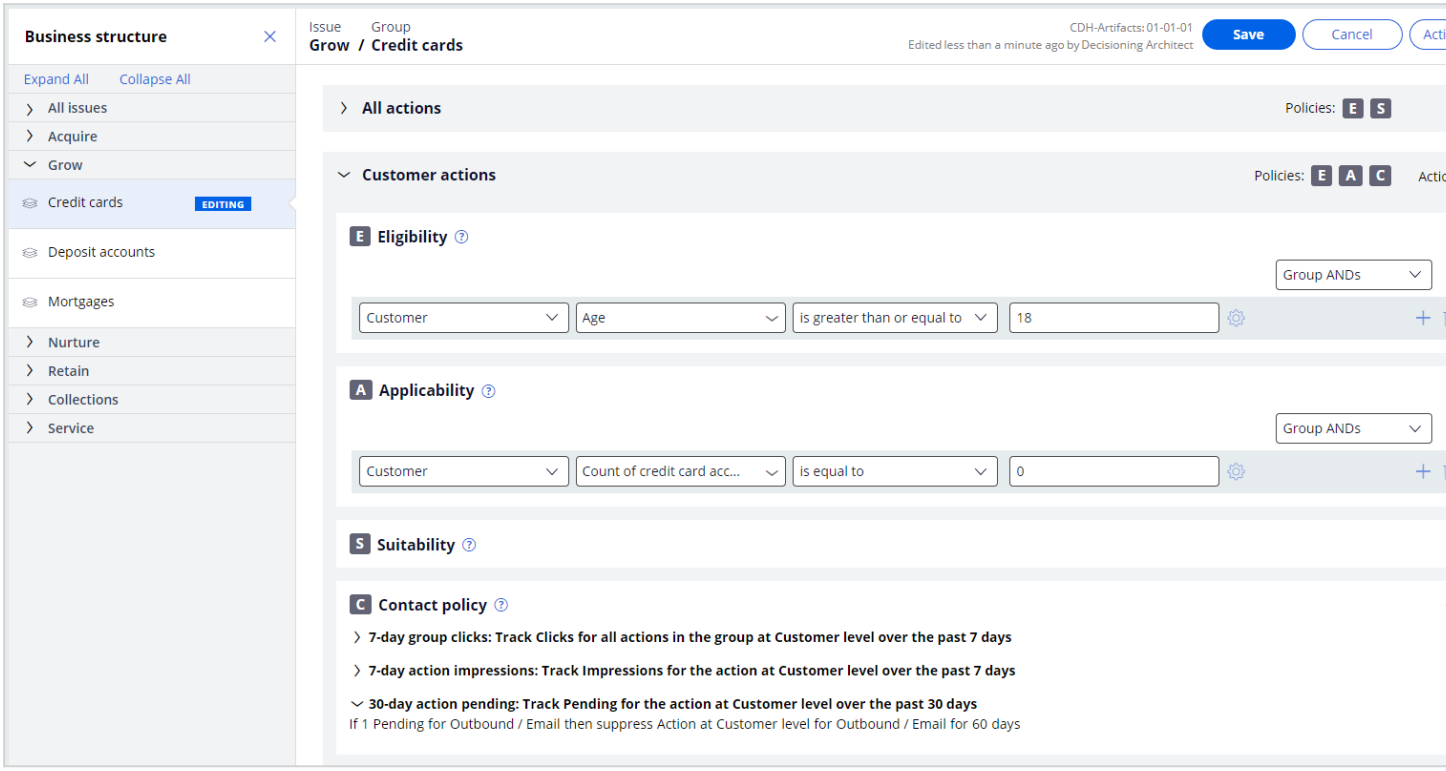


Associating a contact policy with an issue and a group

On the **Engagement policy** tab, you can associate contact policies with an issue and group. The contact policies are reusable across all issues and groups.



As the bank wants to suppress promotional emails related to credit card offers, you need to edit the **Credit cards** group to add the newly defined contact policy to it.


Business structure
Expand All
Collapse All
All issues
Acquire
Grow
Credit cards
EDITING
Deposit accounts
Mortgages
Nurture
Retain
Collections
Service
Issue
Group
Grow / Credit cards
CDH-Artifacts: 01-01-01
Edited less than a minute ago by Decisioning Architect
Save
Cancel
All actions
Policies: E S
Customer actions
Policies: E A C
E Eligibility
Group ANDs
Customer
Age
is greater than or equal to
18
A Applicability
Group ANDs
Customer
Count of credit card acc...
is equal to
0
S Suitability
C Contact policy
7-day group clicks: Track Clicks for all actions in the group at Customer level over the past 7 days
7-day action impressions: Track Impressions for the action at Customer level over the past 7 days
30-day action pending: Track Pending for the action at Customer level over the past 30 days
If 1 Pending for Outbound / Email then suppress Action at Customer level for Outbound / Email for 60 days

Limiting action volume on outbound

Description

In outbound customer engagement, you need to cater to different kinds of operational limitations. These may include limits on the number of email communications that can be sent in a day, or the total number of communications that can be sent regarding a particular offer. Learn how to define volume constrains to limit the volume of actions in an outbound run.

Learning objectives

- Limit outbound action volumes using volume constraints

Volume constraints

In Pega Customer Decision Hub™, you can limit the volume of actions that the system delivers to customers through always-on outbound.

Volume constraint modes

Within a volume constraint definition, you can define the combination of constraints for one or more actions with one or more channel types.

In situations where a customer is eligible for multiple actions, you can apply volume constraint with one of three modes, depending on the business requirement. You might specify whether to apply volume constraints to actions as a group (for which a customer qualifies) or evaluate each action for which a customer qualifies separately.

Individually for each action

In this mode, the top action for which a customer qualifies passes through the set of defined volume constraints, and the system validates each action against each constraint type. If the action passes through all the constraints, the system selects the action and delivers it to the customer. The customer always receives a maximum of one action, even though the limits for the other low-priority actions is not reached. The top action is selected based on priority calculations (p*c*v*l) defined in Next-Best-Action Designer arbitration.

For example, consider a customer who is eligible for the **Standard card**, **Rewards card**, and **Rewards Plus card** credit card actions, and the **Standard card** is the top priority card. Also, assume that the remaining volume for the top action (Standard card) and priority 3 action (Rewards Plus card) is above zero, and the remaining volume for the priority 2 action (Rewards card) is zero. When you set volume constraints mode to **Individually for each action**, the customer sees only the top priority action, **Standard**

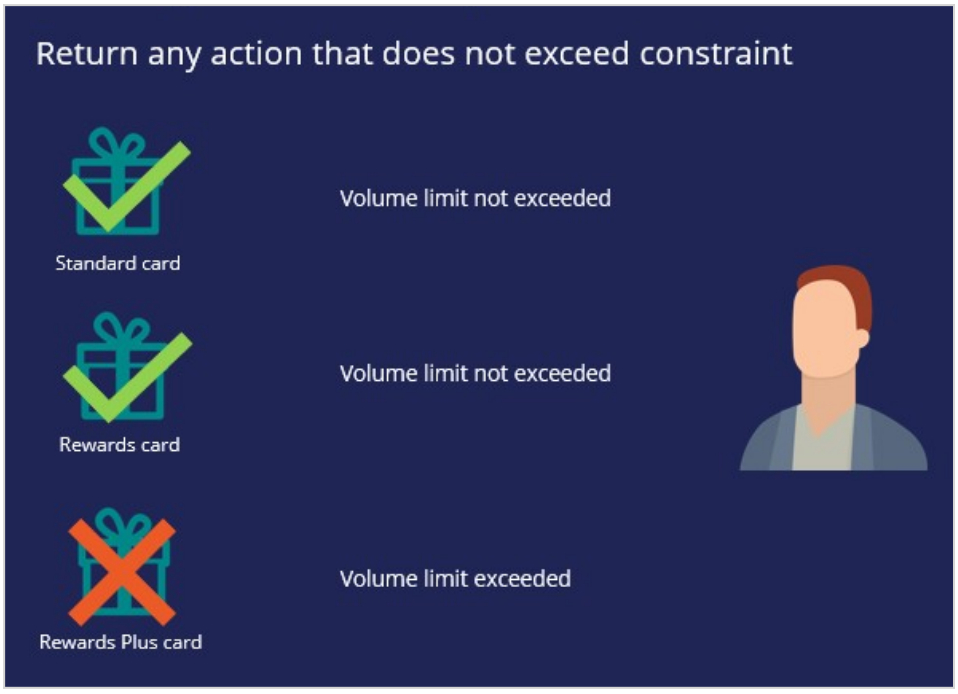
card, as shown in the following figure:

If the volume remaining for the top priority action is zero, then the next priority action is validated against the constraint types.

Return any action that does not exceed constraint

In this mode, each action a customer qualifies for passes through the set of defined volume constraints, and the system validates each action against each constraint type. If an action passes the set of constraints, the system delivers the action. If an action does not satisfy a constraint, the system does not deliver an action. The system considers all actions for which a customer qualifies, and the order in which the check occurs is irrelevant. The result is that a customer receives all the actions for which they qualify provided that the actions do not reach the volume limit. The **Return any action that does not exceed constraint** mode is the recommended approach, even though the system does not consider priority during the volume constraint phase. This mode ensures that the limit handling is separated from arbitration logic.

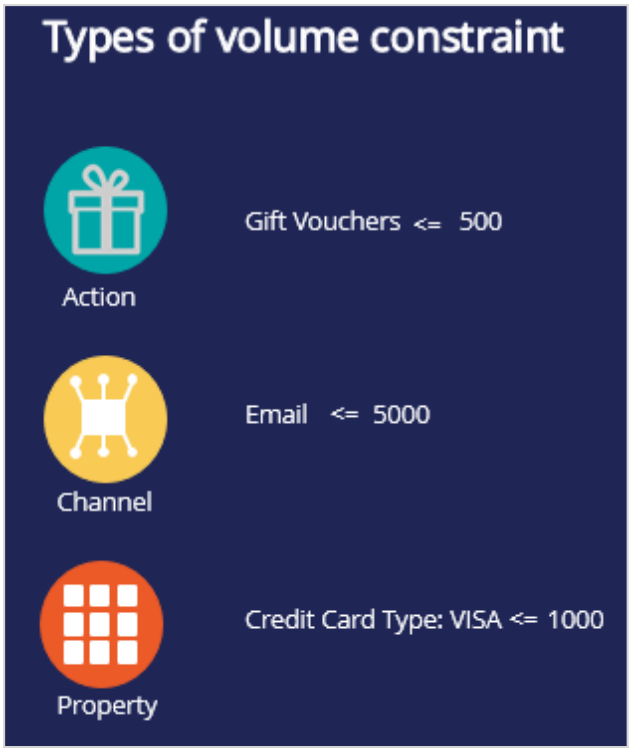
For example, consider a customer who is eligible for the **Standard card**, **Rewards card**, and **Rewards Plus card** actions. Also, the remaining volume for **Standard card** and **Rewards card** is above zero, but the volume of the Rewards Plus card action reached zero. When you set volume constraints to **Return any action that does not exceed constraint**, the customer receives **Standard card** and **Rewards card** but not the **Rewards Plus** card, as shown in the following figure:



When the system evaluates each action separately, Pega Customer Decision Hub can present all actions that pass the engagement policy conditions to the customer.

Volume constraint types

Volume constraints fall into three categories depending on the level at which you apply the constraints: action, channel, or property, as shown in the following figure:



Action constraint

An action constraint limits the volume of actions that the system can send to customers.

An action constraint is useful when you have a limited number of actions that you can send to customers, for example, 500 gift vouchers. Configuring an action constraint ensures that you do not offer more actions than are available.

Channel constraint

A channel constraint limits the volume of actions that the system can deliver through a certain channel.

You can use a channel constraint for channel capacity planning. For example, assume that your call center can only handle up to 1000 inbound calls daily due to limited capacity. If your company sends out 50,000 emails per day to customers, it's reasonable to anticipate that 2-3% of the recipients may follow up with an inbound call, which translates to approximately 1000-1500 calls daily. This volume of calls would exceed the capacity of your inbound call center. Therefore, to prevent the call volume from surpassing the handling capacity, it would be necessary to restrict the number of outbound emails sent to 35,000 per day.

Property constraint

By default, actions fall into the issue-group business hierarchy. By using a property constraint, you can limit the volume of a set of actions across different issues and groups by grouping them using a property value.
For example, you can group all credit card actions by setting a property, *CreditCardType*, to VISA. Then, you can define a constraint to limit the action volume where you do not want to send more than 500 VISA credit cards in a month.

Outbound run scenario

In an outbound run, the system considers a segment of the audience for an outbound communication. When customers are eligible for multiple actions, the system applies volume constraints across customers to limit the volume of actions that it delivers. After the next-best-action logic runs, the system executes the volume constraint limits in a non-predefined order of the customers.

Consider a simplified example of five customers to better understand how the limit constraint engine works. The following table shows the set of customers from the audience, the actions for which they qualify, the channel for which a treatment is defined, and the priority of the action. The priority represents the final priority calculation (p*c*v*l) as defined in the Next-Best-Action Designer arbitration.

Interaction ID	Action	Channel	Priority
CUST-01	Gold Card	Push	50
CUST-02	Gold Card	Email	25
CUST-03	BOGO	Push	75
CUST-03	Platinum Card	Email	50
CUST-03	Free Shipping	SMS	25
CUST-04	Free Shipping	Direct mail	50
CUST-05	BOGO	SMS	50
CUST-05	Free Shipping	Push	25

The following table shows the volume constraints configured in the system. There are two types of volume constraints configured:

1. A channel constraint with a limit of *2* actions for the **Push** channel.
2. An action constraint with a limit of *1* for the **BOGO** action.

Volume Constraints

Key	Value	Maximum
Channel	Push	2
Action	BOGO	1

Mode 1: Individually for each action

Interaction ID	Action	Channel	Priority
CUST-01	Gold Card	Push	50
CUST-02	Gold Card	Email	25
CUST-03	BOGO	Push	75
CUST-03	Platinum Card	Email	50
CUST-03	Free Shipping	SMS	25
CUST-04	Free Shipping	Direct mail	50
CUST-05	BOGO	SMS	50
CUST-05	Free Shipping	Push	25

Interaction ID	Action	Channel	Priority
CUST-02	Gold Card	Email	25
CUST-03	BOGO	Push	75
CUST-04	Free Shipping	Direct mail	50
CUST-05	Free Shipping	Push	25

If there are no volume constraints configured for a particular channel, action, or property, the system does not apply limits, and the actions pass through for outbound communication.

Therefore, *CUST-02* and *CUST-04* pass through as there are no limits defined for these actions (**Gold Card** and **Free Shipping**) or channel (Email, Direct mail).

The system considers the rest of the customers in a non-predefined order. Assume that it picks *CUST-03* and *CUST-05* first. Note that for *CUST-03*, the system chooses the BOGO action with higher priority. In this mode, the system delivers only one action for each customer and ignores the other two actions.

CUST-05 qualifies for two actions: **BOGO** (priority 50) and **Free Shipping** (priority 25). Because the system picked the BOGO action for *CUST-03* and exhausted the action limit, it selects the next action, Free Shipping, for *CUST-05*.

Because the system selected two **Push** channel actions and one **BOGO** action, both reach their volume constraint limits, and *CUST-01* receives no action.

Mode 2: Return any action that does not exceed constraint

Interaction ID	Action	Channel	Priority
CUST-01	Gold Card	Push	50
CUST-02	Gold Card	Email	25
CUST-03	BOGO	Push	75
CUST-03	Platinum Card	Email	50
CUST-03	Free Shipping	SMS	25
CUST-04	Free Shipping	Direct mail	50
CUST-05	BOGO	SMS	50
CUST-05	Free Shipping	Push	25

Interaction ID	Action	Channel
CUST-02	Gold Card	Email
CUST-03	Platinum Card	Email
CUST-03	BOGO	Push
CUST-03	Free Shipping	SMS
CUST-04	Free Shipping	Direct mail
CUST-05	Free Shipping	Push

CUST-02 and *CUST-04* pass through as no limits are defined for these actions.

Assume that the system picks *CUST-03* and *CUST-05* first. In this mode, *CUST-03* receives all the actions for which they qualify because the actions did not reach the limit.

CUST-05 receives only the **Free Shipping** action and not the **BOGO** action, as the BOGO action reaches the volume constraint limit when the system offers the action to **CUST-03**.

Finally, *CUST-01* does not pass through because the Push channel reaches the volume constraint limit.

Configuring a volume constraint

Business scenario

U+ bank has been running always-on outbound and now they would like to apply some limitations on the outbound volume. They have the following three different kinds of operational constraints to implement.

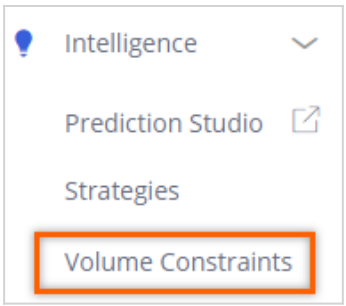
- The IT department has enforced a limit of 1000 emails per week to avoid being classified as spammers. Hence, the marketing team wants to adhere to the limits.
- The bank would like to restrict the number of Standard card offer emails to only 100 per week due to a business requirement.
- The bank would also like to limit offer emails related to credit cards of type “Master” to only 400 per week due to a logistical issue with their fulfillment vendor.

Creating a volume constraint

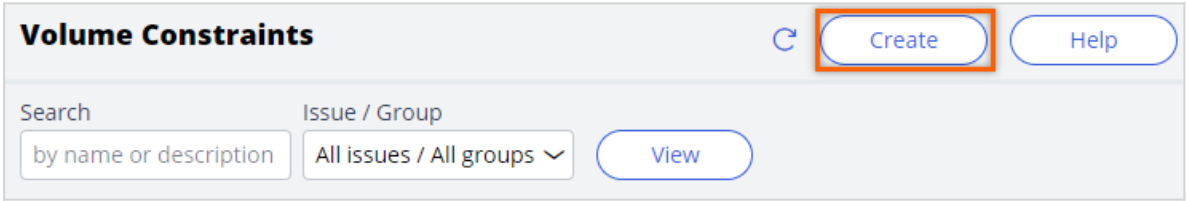
A constraint is an optional configuration element of always-on outbound. When configured, it will limit the volume of actions that will ultimately be initiated.

To limit action volume on the email channel, you need to configure a volume constraint for the always-on outbound.

The volume constraint landing page can be accessed from **Intelligence** -> **Volume Constraints** from the navigation menu.

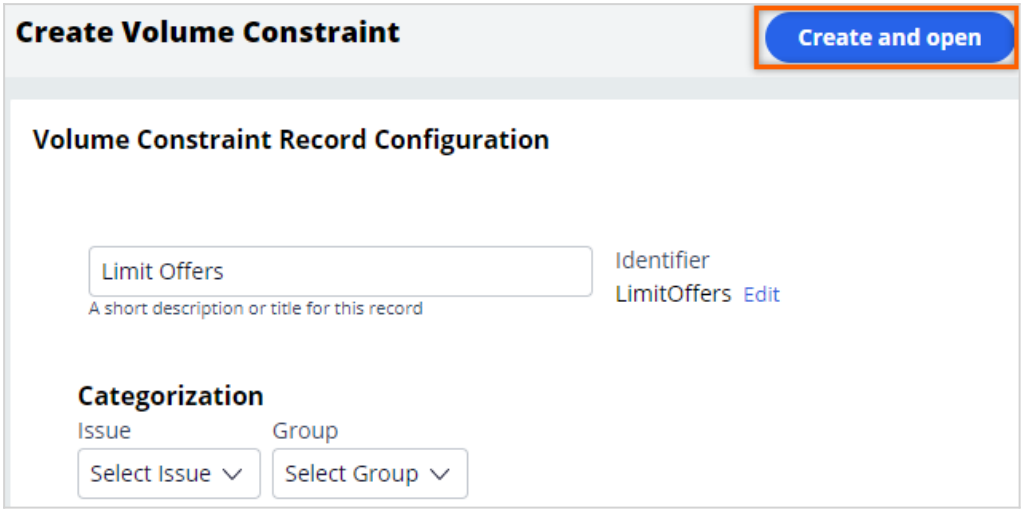


You can add a new volume constraint from this page.



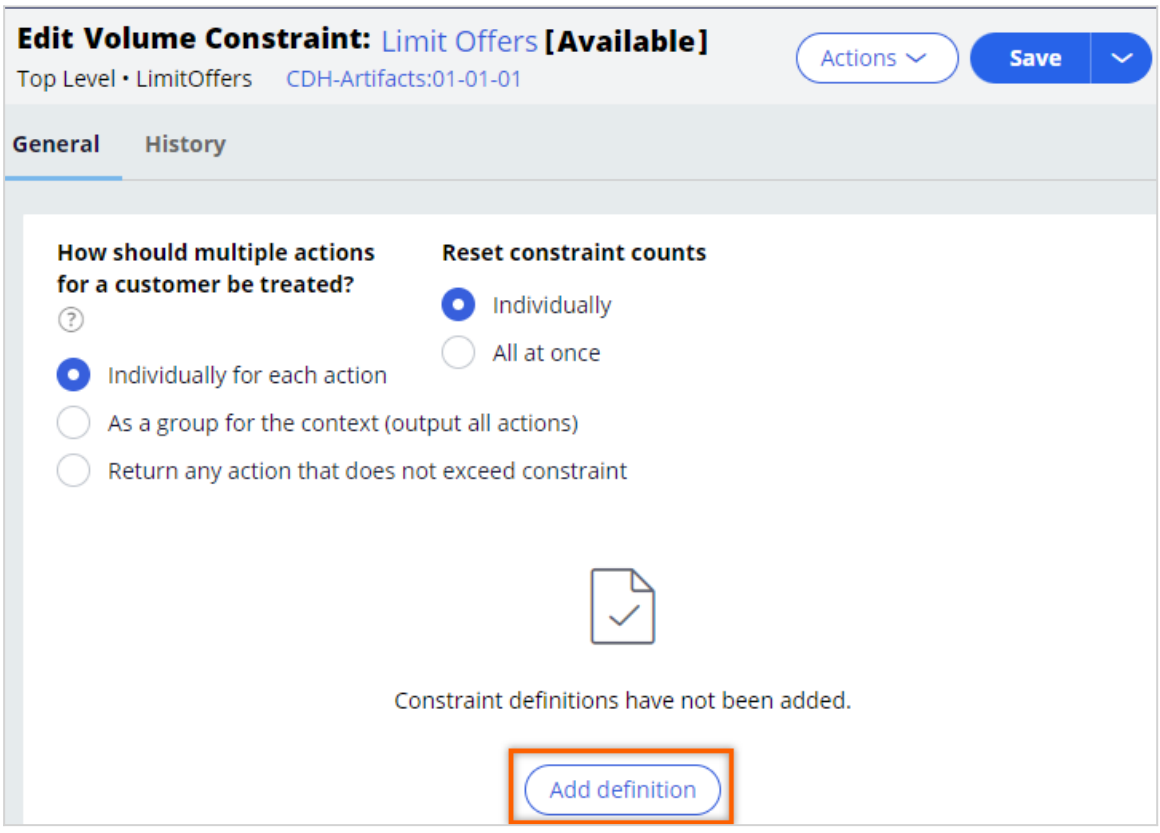
Provide a short description for the new volume constraint and the identifier is automatically populated when you tab out.

Note: As a best practice, the volume constraint must be created at the top level of your hierarchy for it to be used in the Next-Best-Action Designer outbound schedule.



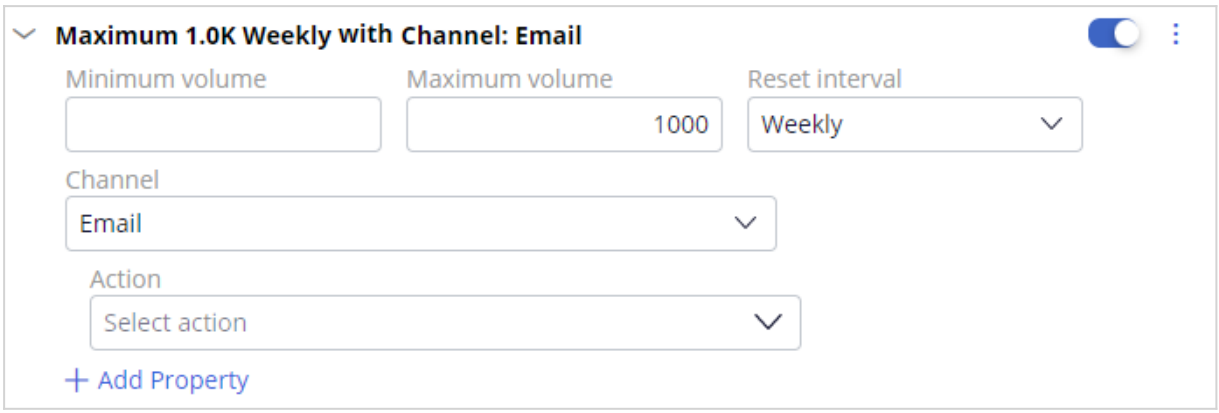
Configuring a volume constraint

The **General** tab is where you configure the different types of volume constraints.

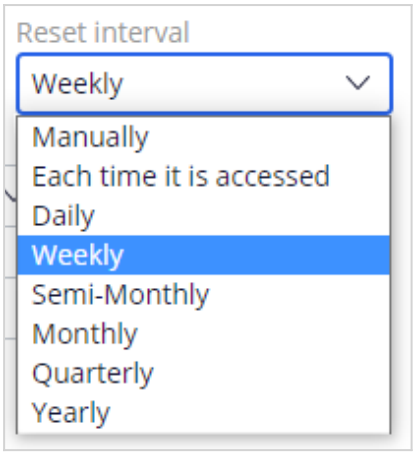


Note: The **As a group for the context (output all actions)** constraint mode is considered deprecated and may be removed in future versions of the product.

In this scenario the bank wants to implement three types of volume constraints. As a first step, add a channel constraint that limits the number of outbound messages to 1000/week on the email channel.



The **Reset interval** option determines how frequently the volume limit is reset to the full quota. There are a number of reset interval options available, including: *Manually*, which will allow you to reset the constraint limits manually using the **Reset** button.

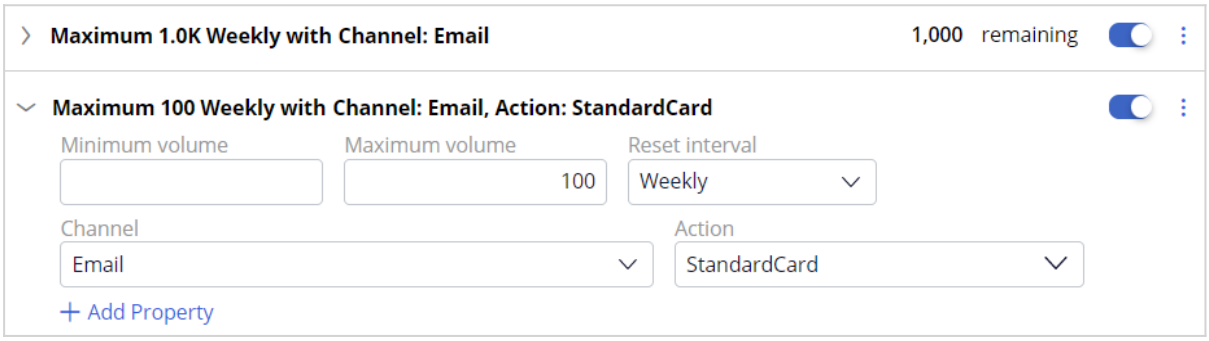


The other options in this list can be used when you want the system to automatically reset the constraint. For example, *Weekly* means that the system will reset the limits the first time they are applied in a particular week, Sunday being considered the first day of the week.

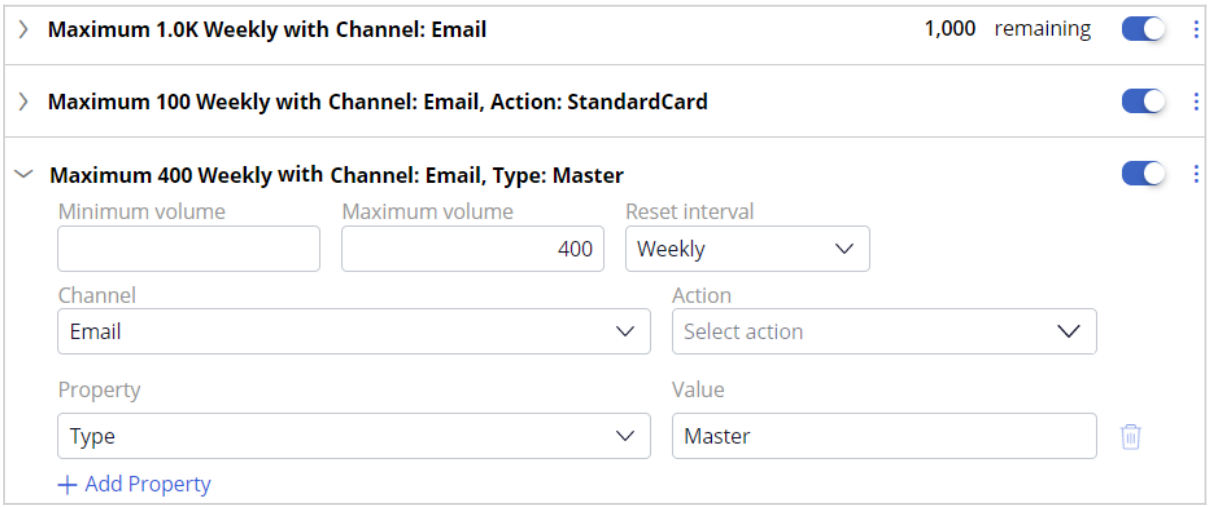
The remaining quota of the volume constraints, if any, in a given reset interval will be used in the following scheduled run. For example, if only 300 Rewards card emails can be sent in a week, the scheduled run might send 250 emails based on action prioritization. The remaining 50 emails will be sent in the same week during the next scheduled run.

In this case, configure the **Reset interval** as *Weekly* for both channel and action constraints.

Next, add an action constraint that will restrict the Standard card offer emails to only 100 per week.



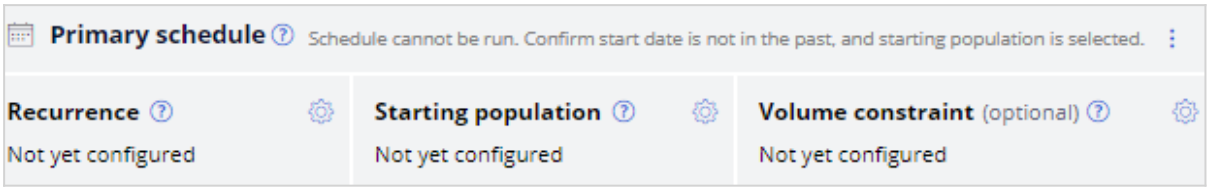
Finally, as per the requirements, add a property constraint that will limit offer emails related to credit cards of type “Master” to only 400 per week.



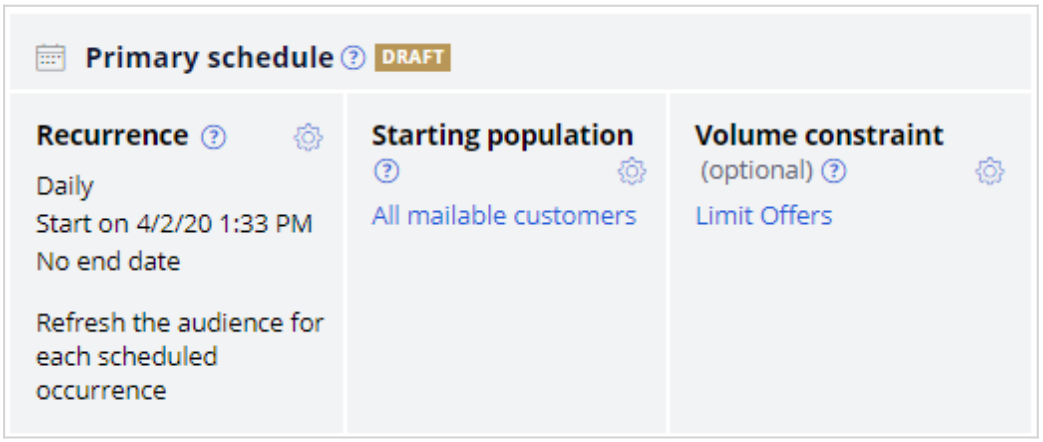
Configuring volume constraint in the Next-Best-Action Designer

To implement this business requirement, you need to configure the Next-Best-Action Designer to perform always-on outbound customer engagement with the volume constraint configured.

On the **Channels** tab, configure the **Primary Schedule** to achieve this.

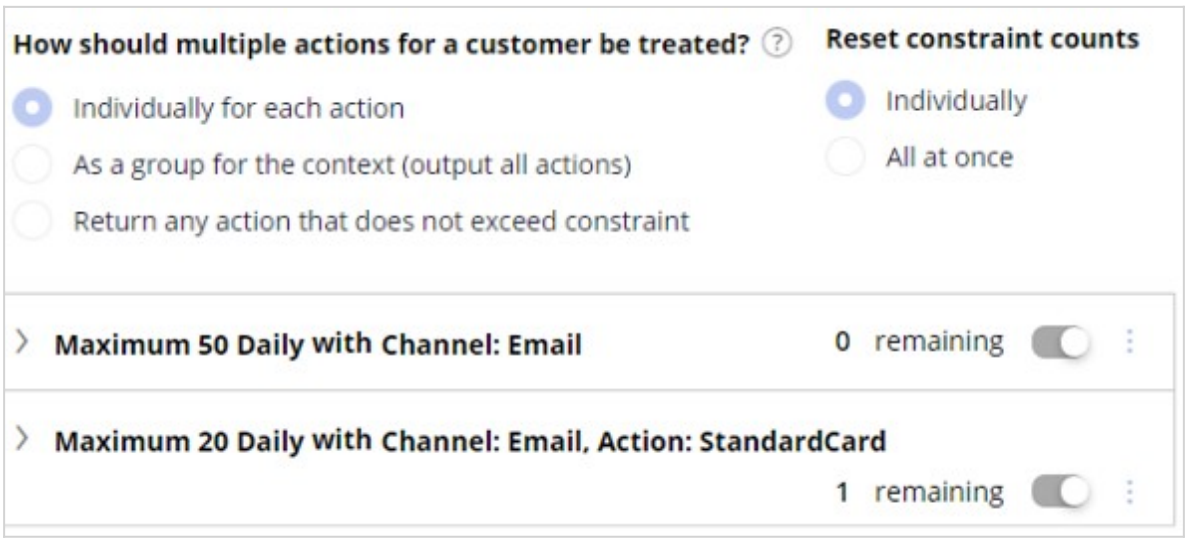


The schedule has two mandatory configurations, **Recurrence** and **Starting population**. To include the volume limits on outbound, you must configure the **Volume constraint**.



With that, all the necessary configurations for this scenario are complete.

Run the schedule. Once the primary schedule has run, you can check the remaining volume limits for the constraints. The remaining quota of the volume constraints, if any, in a given interval will be used in the following scheduled run.



Sharing action details with third-party distributors

Description

Sending outbound communications via email and SMS has its challenges, including various operational, security and legal requirements. Sometimes, it's easier to let an external email service provider handle message delivery for you. Learn how to share action details with an external service provider using files and database templates.

Learning objectives

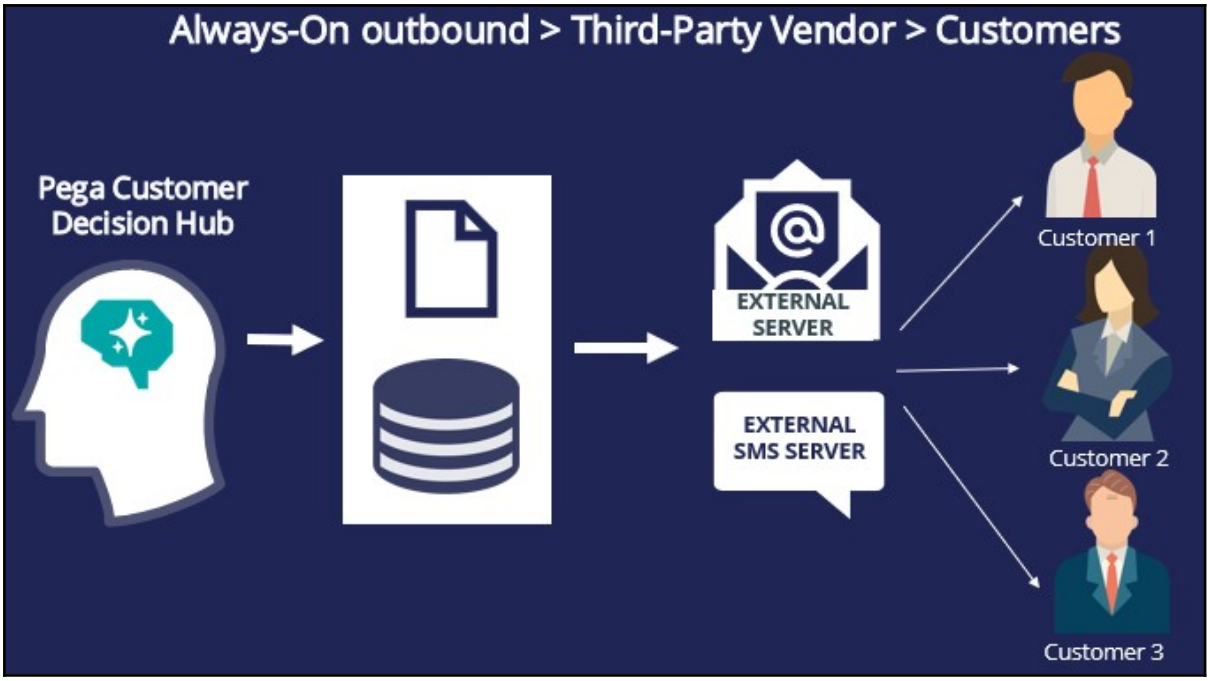
- Explain outbound file and database templates
- Write action details to files or database tables to send to third-party email service vendors

File and database templates

Why do you need outbound templates?

In outbound customer engagement, Pega Customer Decision Hub sends action messages to customers directly via email or SMS. That is, Pega Customer Decision Hub directly communicates with the email or SMS servers to send out outbound messages to qualified customers.

However, sometimes the necessary infrastructure to send action messages directly to customers may not be available. In such cases, you need to use a third-party email/SMS distributor. You need a medium to transfer the action and customer details, to a third-party distributor, which is typically a file or a database table.

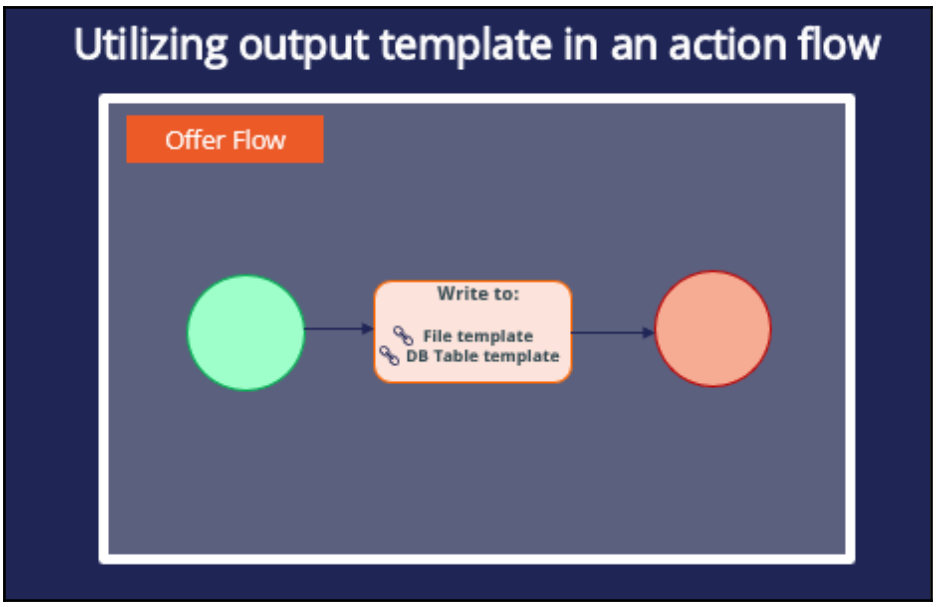


Pega Customer Decision Hub enables you to write the file in one of the following cloud-based destinations as well as the local filesystem.

- JFrog Artifactory
- Amazon S3
- Microsoft Azure

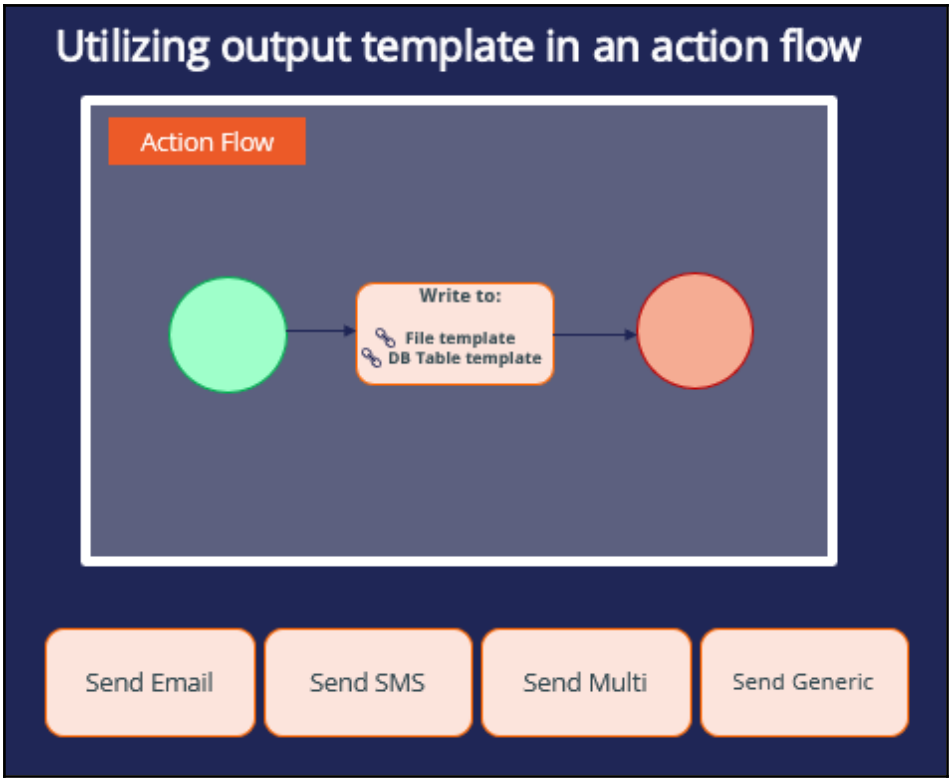
Writing action details to a file or database

Pega Customer Decision Hub enables you to easily write action details to a file on the local system or on a cloud-based destination such as Amazon S3 or to a database table, which can be sent to a third-party vendor or application for distribution. To achieve this, you need to configure an action flow to include a Send shape with the file or database template option enabled.



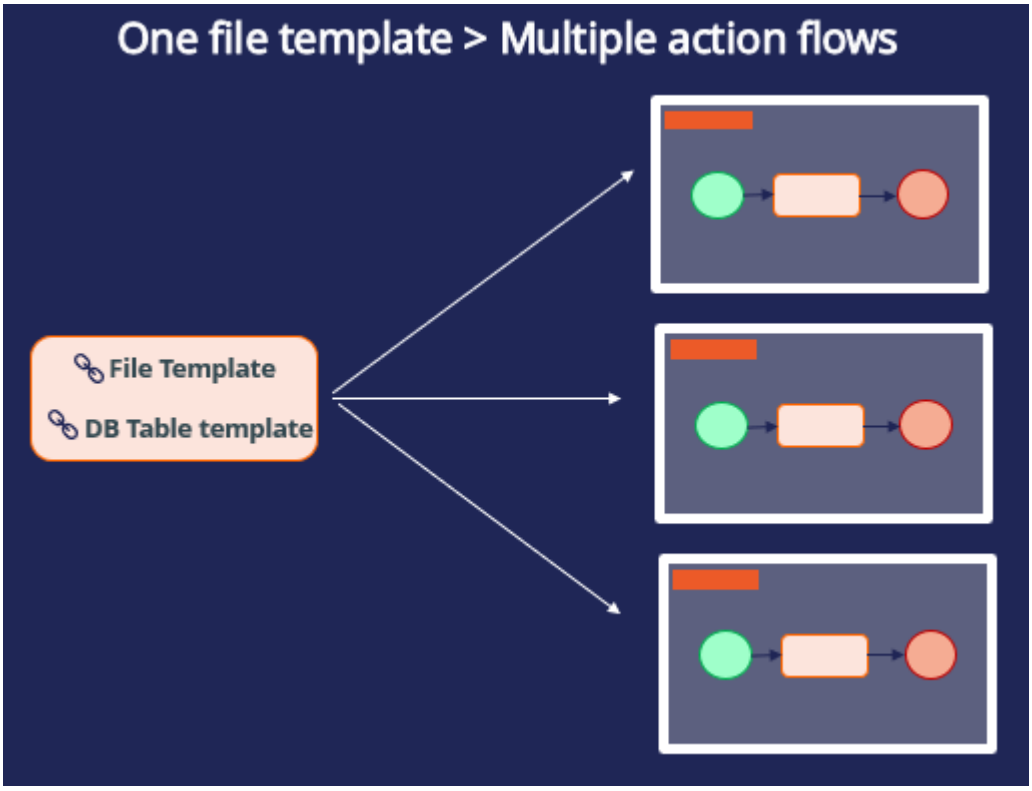
The four available Send shapes that can be used for this purpose are: **Send Email**, **Send SMS**, **Send Multi,** and **Send Generic**. Any one of these shapes can be used to write action details to a file or a database table. However, when you know that the action messages will be sent eventually via Email or SMS by the third-party vendor, it is better to use the corresponding shape, as this will clearly illustrate the purpose of the component and the channel will be recorded as an Email or SMS in the Interaction History.

If you are unsure of the communication channel, or if it is a channel that Pega Customer Decision Hub cannot directly integrate with, use the Send Generic shape.



Multiple action details in a single location

Details of multiple actions can be written to the same file or database table. To do this, you need to configure the same file/database table template in multiple action flows. This functionality is useful when *the Next-Best-Action outbound schedule includes multiple actions. This approach consolidates multiple action details into a single location.*


One file template > Multiple action flows
File Template
DB Table template

Creating an external treatment to share action details in a file or database

Outbound emails are sent either directly by Pega Customer Decision Hub or by a third-party email service provider. Use external email treatments to send the necessary customer data to email service providers in the form of a file or a database table. When you use external email treatments, Pega Customer Decision Hub™ does not store email content. In this case, Customer Decision Hub does not have direct integration with an SMTP server, but a third-party email service provider handles the service. These providers rely on file or database integrations and have a defined format of the data that they expect.

In such cases, create the file or database integrations in Customer Decision Hub with all the information you want to share with the third-party email service provider. Then, associate the file or database template with an external treatment. With external email treatments, Customer Decision Hub generates the data that the third-party email service provider requires to send the emails.

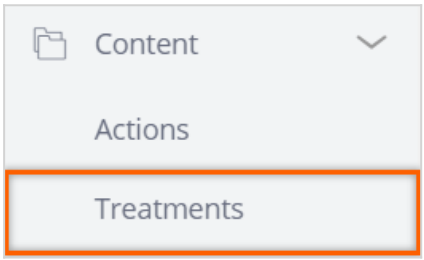
Business scenario

U+ Bank, a retail bank, sends credit card offers to eligible customers by email. However, to comply with the security and spamming regulations, the bank wants to use a third-party email delivery service instead of using the in-house email server. As a result, the offer details need to be written to a file that can be shared with a third-party email service provider and mapped to an external email treatment.

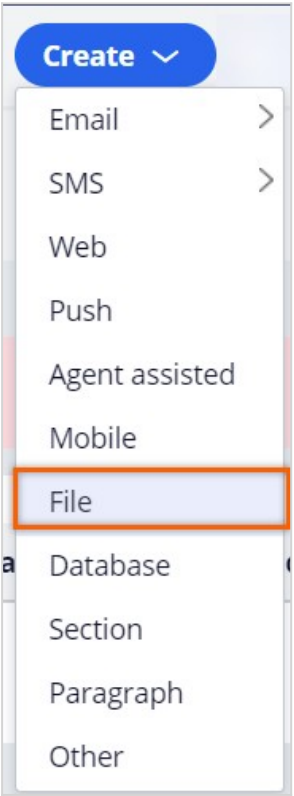
Creating a file template

Pega Customer Decision Hub™ enables you to write action details to a file that can be sent to a third-party vendor or application for distribution.

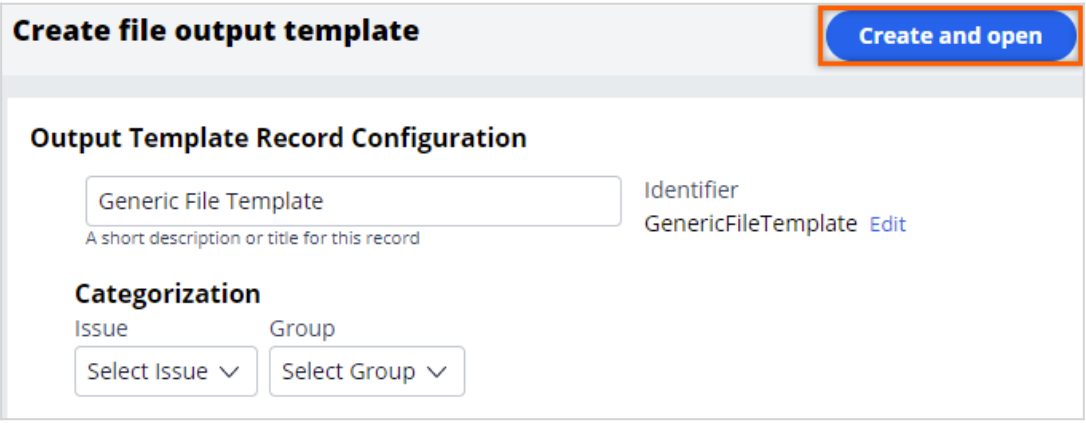
To implement this business requirement, you need to configure a file template. The file template landing page can be accessed from the navigation pane, **Content** > **Treatments**.



You can create a new file template from this page.



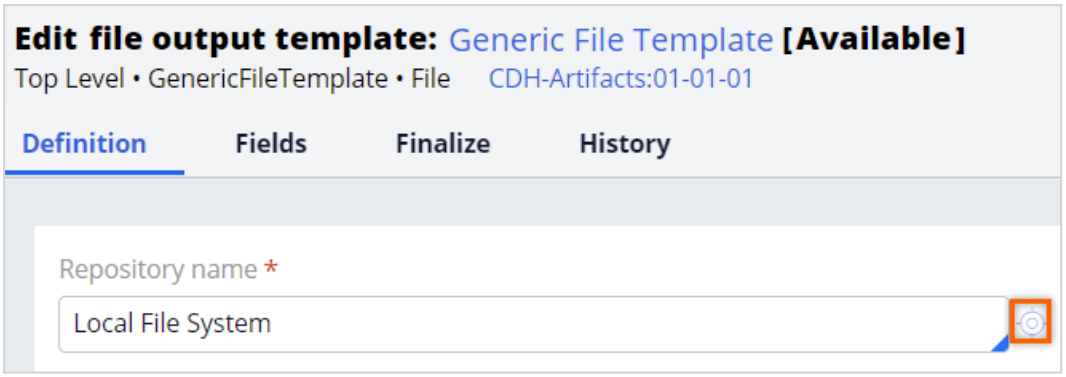
Provide a short description for the new file template, and the identifier is automatically populated when you tab out.



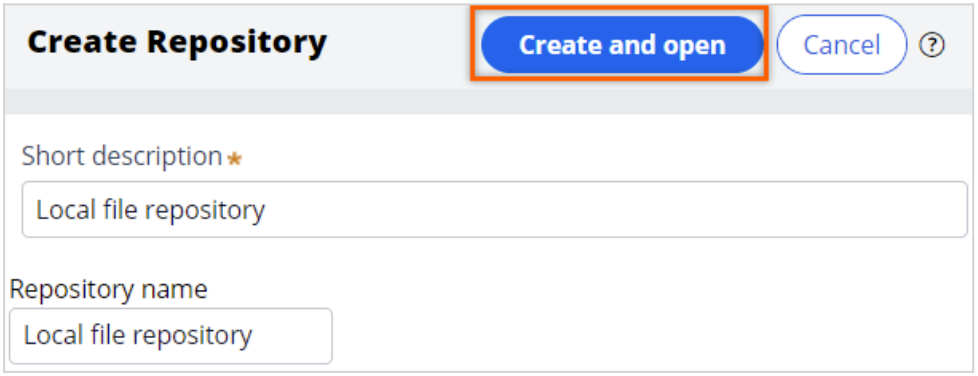
Creating a repository

When configuring a file template, provide details on an existing repository or create a new repository where the file needs to be stored.

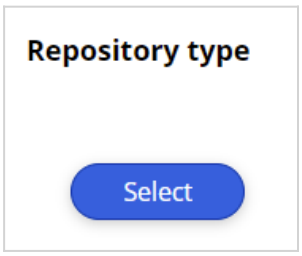
In this case, you create a new repository.



Provide a short description and a name for the repository to create one.

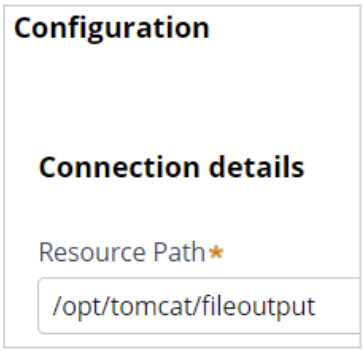


Select a **Repository Type** where you want to store the file.



Pega Customer Decision Hub supports various cloud-based destinations as repository types, such as **JFrog Artifactory**, **Amazon S3**, and **Microsoft Azure**, in addition to the local file system.

When you select the **File system** repository type, in the **Resource Path**, provide a directory path in the file system to where you want to store the file.

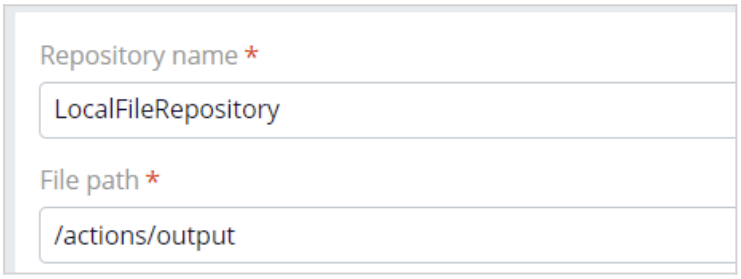


Configuring a file template

In the **Edit file output template** page, continue configuring the file template.

Select the repository and provide a path where the file needs to be stored. The location is a sub-directory under the directory specified in the file system repository. The format for the file path and name is folder/filename.

For example, if the repository path is */opt/tomcat/fileoutput* and the file path is *actions/output/mailing-list.csv,* then the file will be created under */opt/tomcat/fileoutput/actions/output.*

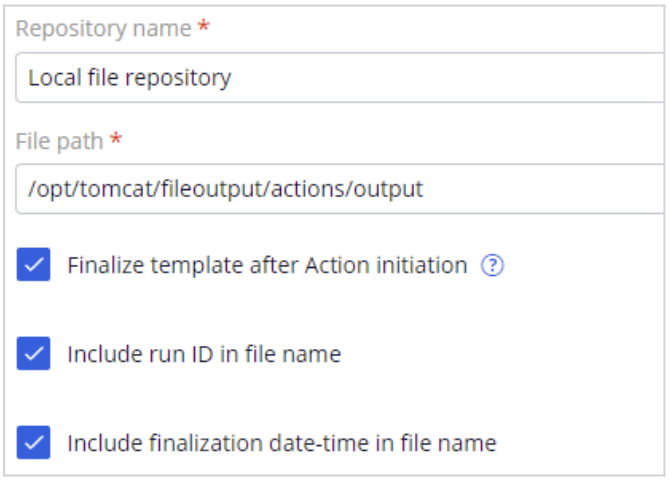


Finalizing the output template

Finalization is the technical process of writing data from an internal staging area to the final file. Finalized data is ready to be consumed by a different system. The system can trigger finalization manually or automatically based on a schedule. Select the **Finalize template after Action Initiation** option to trigger the finalization after each run.

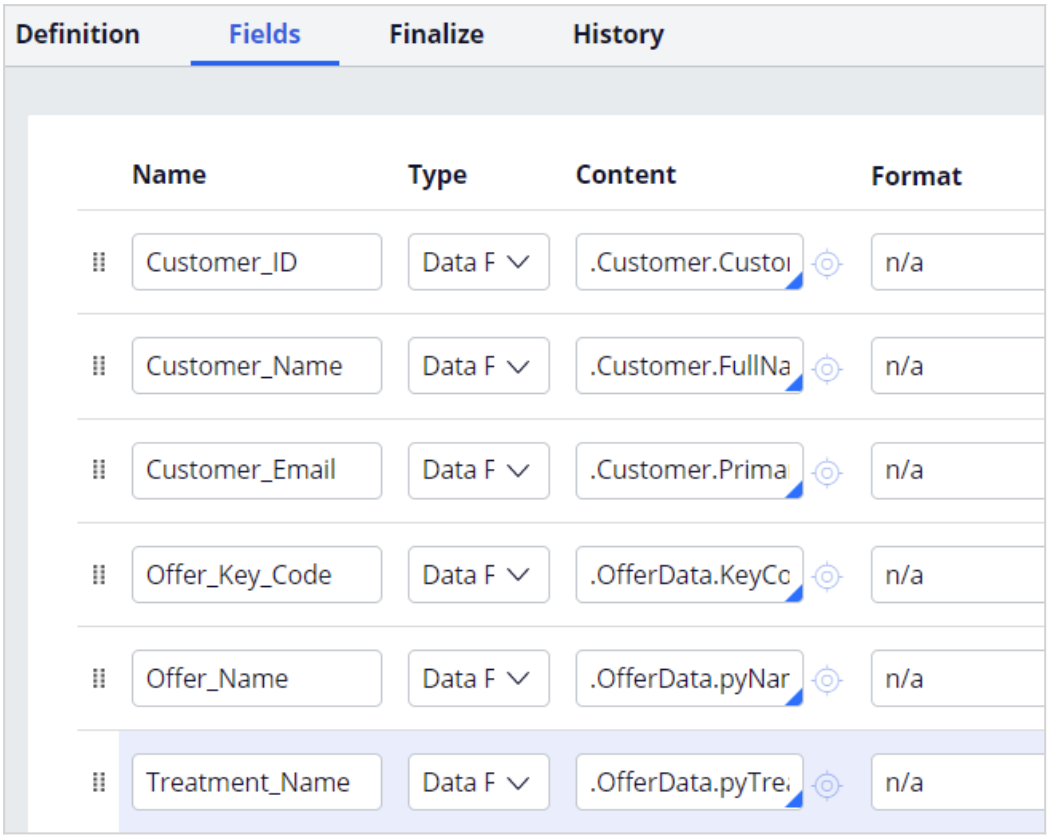
By finalizing a template at the end of each run, you ensure that all data in the file is the result of a single run. That is, the final output includes all data related to the run that triggered the finalization. If you want the data from multiple outbound runs to be written to the same file, leave this option unselected. When you leave this option unselected, you must configure a separate finalization schedule in the **Finalize** tab or finalize the file manually in the **Treatments** > **File** landing page.

If you choose to finalize at the end of each run, select **Include run ID in file name** to include the run ID for easier identification of the files generated in each run.

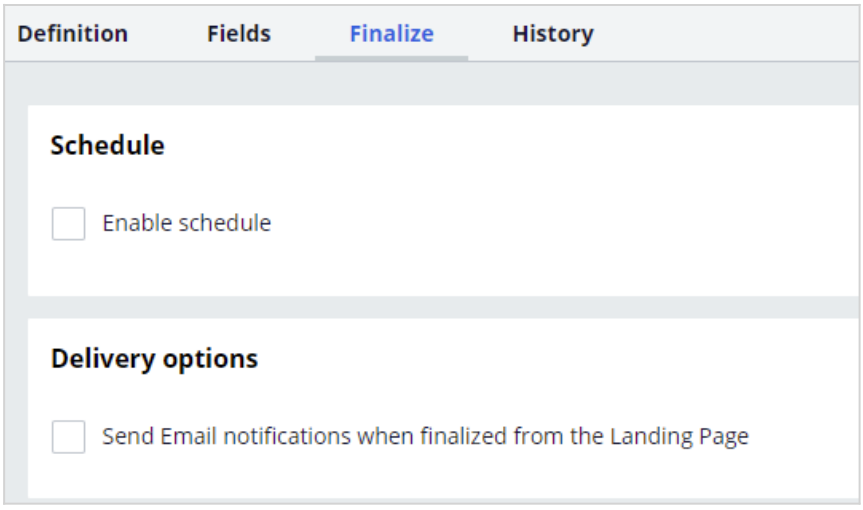


In the **Fields** tab, you can configure the information elements that you want to output.

You can configure the customer and action details that you want to share with the third-party email service provider. In the **Name** field, you enter a name for the field. In the **Content** field, you select the corresponding property. Use the *.Customer.* construct to access customer properties and *.OfferData.* construct to access action properties. As shown in the example, adding the treatment name as an information element helps to map the actions with the corresponding external treatments.



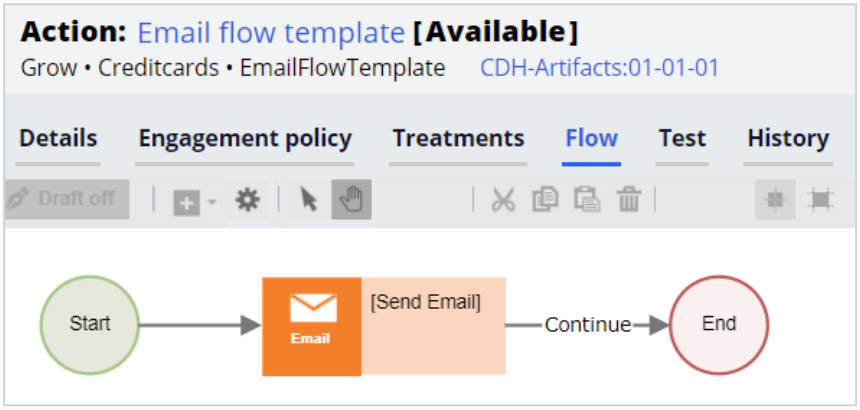
On the **Finalize** tab, you can configure further finalization options.



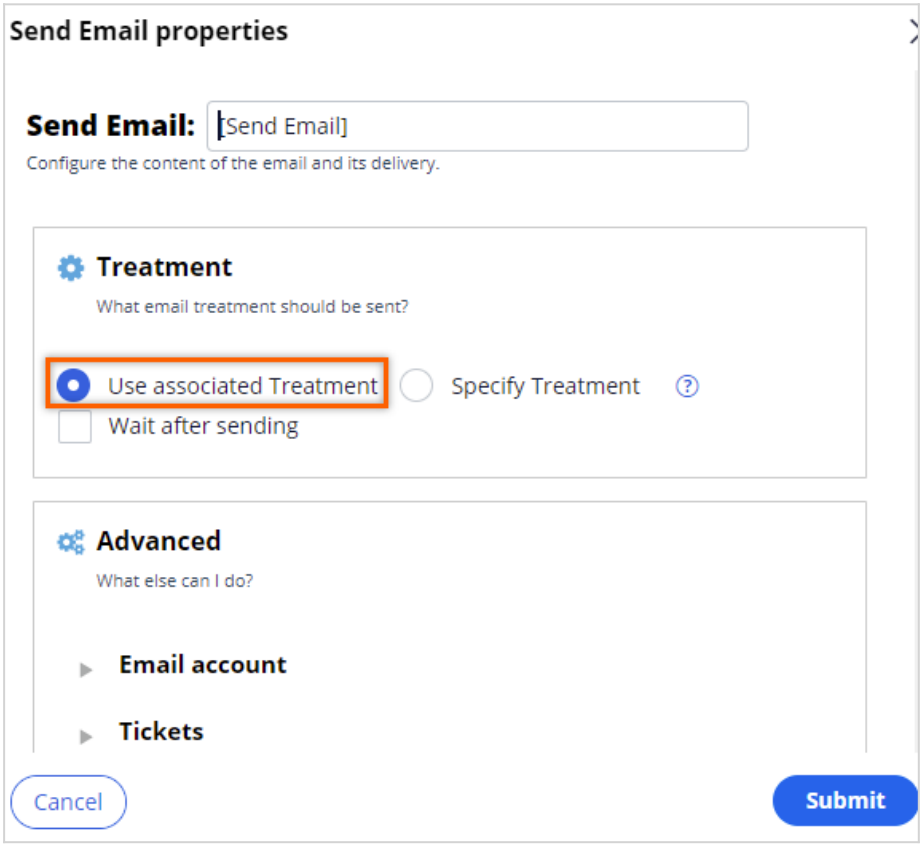
The **Advanced** section can be used for additional processing during the finalization process. For example, you can use it to initiate the file transfer to a particular location.

Using the file template in an action flow

You need to configure one of the **Send*** shapes, that is, Send Email, Send SMS, Send Generic or Send Multi shapes, in the action flow to reference the file template so that the action details are written to the output file during an outbound run.



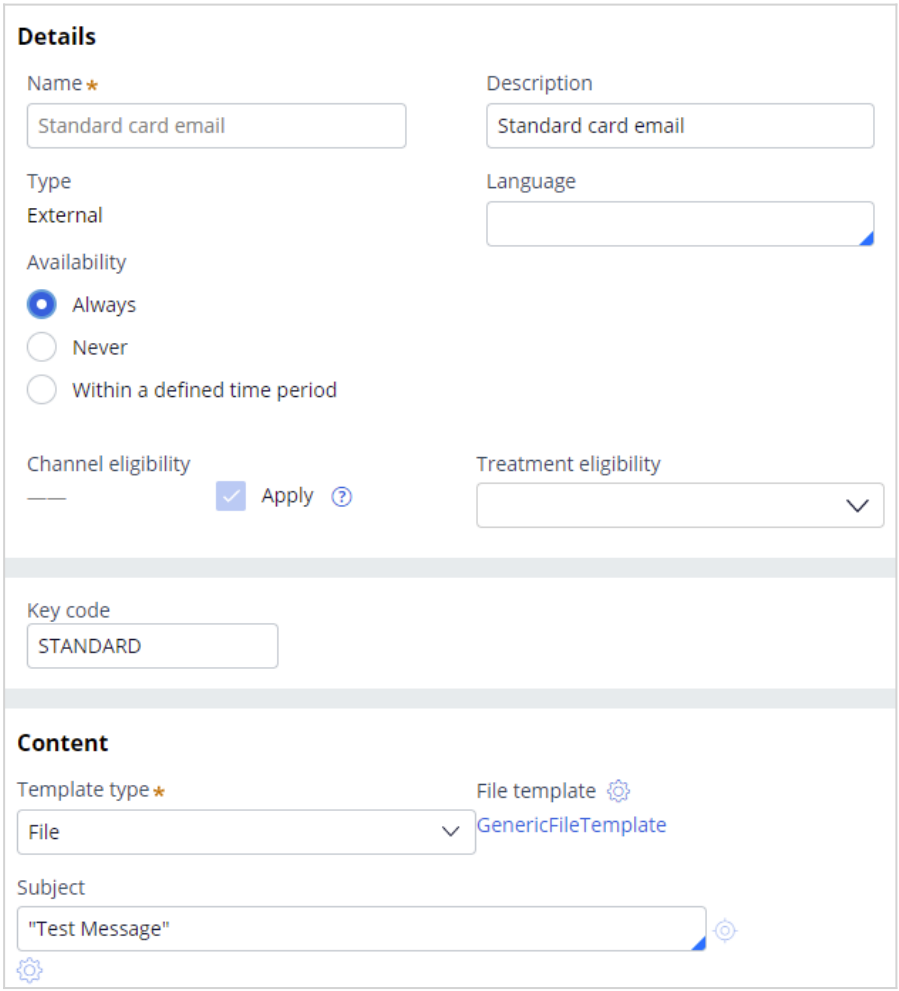
To write action details to a file template, select the **Use associated Treatment** option. This option ensures that the treatment is associated with the action.



Creating an external email treatment

Once you integrate the customer and action details into the file template, create an external email treatment. With external email treatments, Customer Decision Hub generates the data that the third-party email service provider requires to send the emails.

For this scenario, you create a new external email treatment, **Standard card email**. Add a short description and an appropriate **Keycode** for the email treatment. Then, select the file template to write the action details. You use the file template that you created earlier, which the system uses to write the action details that you want to share with the third-party email service provider. Next, add an email subject. You can specify a specific email subject that you want the third-party email service provider to use while sending the outbound emails. You add the *.OfferData.pyEmailSubject* property to the file or database template to include the subject as part of the details of the shared actions.



Running an outbound schedule

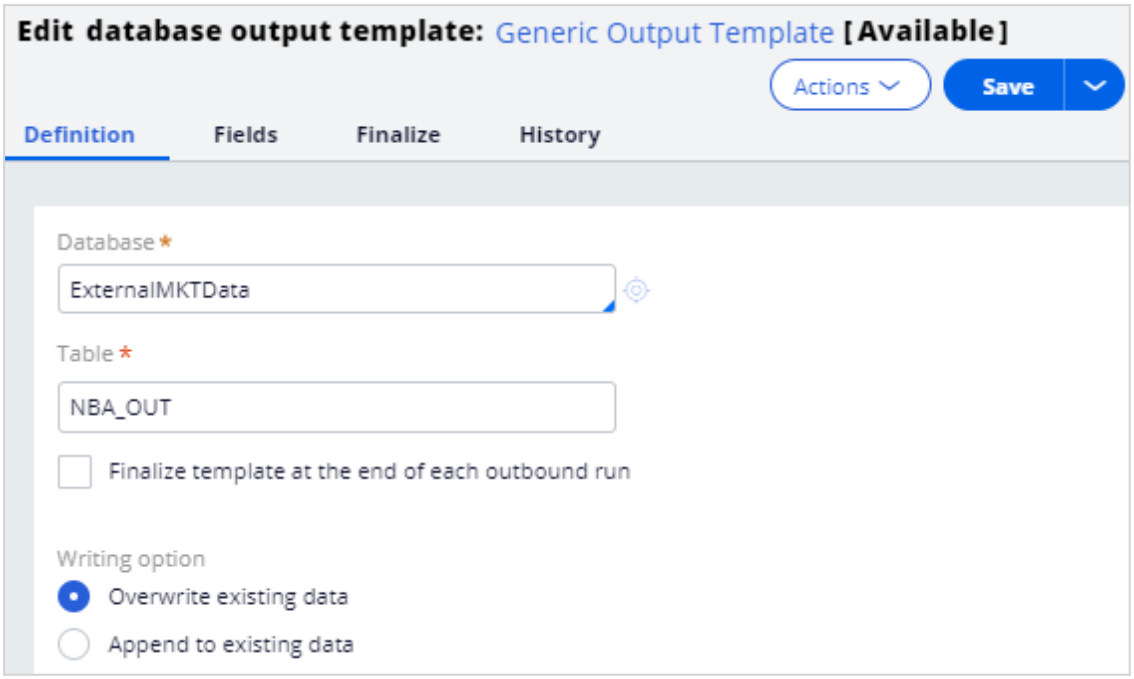
To write the action details to a file, run an outbound schedule. The file with action details is stored in the specified repository.

```
Customer_ID,Customer_Name,Customer_Email,Offer_Key_Code,Offer_Name,Treatment_Name
CUST1605,Larissa Schuster,customer1@enablement.com,REWARDSPLUSCARD,RewardsPlusCard,Rewards Plus card email
CUST682,Anahi Torphy,customer1@enablement.com,REWARDSCARD,RewardsCard,Rewards card email
CUST5388,Sedrick Kutch,customer1@enablement.com,REWARDSPLUSCARD,RewardsPlusCard,Rewards Plus card email
CUST8480,Walton Daugherty,customer1@enablement.com,STANDARDCARD,StandardCard,Standard card email
CUST4058,Abby Russel,customer1@enablement.com,STANDARDCARD,StandardCard,Standard card email
CUST2954,Armani Hessel,customer1@enablement.com,REWARDSCARD,RewardsCard,Rewards card email
CUST1758,Asa Buckridge,customer1@enablement.com,PREMIERREWARDSCARD,PremierRewardsCard,Premier Rewards card email
CUST10887,Madisyn Ondricka,customer1@enablement.com,REWARDSPLUSCARD,RewardsPlusCard,Rewards Plus card email
CUST7548,Arvilla Bartell,customer1@enablement.com,PREMIERREWARDSCARD,PremierRewardsCard,Premier Rewards card email
CUST8634,Rodger Borer,customer1@enablement.com,STANDARDCARD,StandardCard,Standard card email
CUST9863,Bethel Greenfelder,customer1@enablement.com,STANDARDCARD,StandardCard,Standard card email
CUST11084,Morris Littel,customer1@enablement.com,PREMIERREWARDSCARD,PremierRewardsCard,Premier Rewards card email
18,John Smith,customer1@enablement.com,REWARDSPLUSCARD,RewardsPlusCard,Rewards Plus card email
CUST5918,Daija Walker,customer1@enablement.com,PREMIERREWARDSCARD,PremierRewardsCard,Premier Rewards card email
CUST6540,Maeve Bauch,customer1@enablement.com,REWARDSPLUSCARD,RewardsPlusCard,Rewards Plus card email
CUST982,Kobe Waelchi,customer1@enablement.com,REWARDSCARD,RewardsCard,Rewards card email
CUST4119,Quinton Herman,customer1@enablement.com,PREMIERREWARDSCARD,PremierRewardsCard,Premier Rewards card email
CUST3444,Tomas Schneider,customer1@enablement.com,PREMIERREWARDSCARD,PremierRewardsCard,Premier Rewards card email
CUST4322,Myra Donnelly,customer1@enablement.com,REWARDSPLUSCARD,RewardsPlusCard,Rewards Plus card email
CUST7168,Oceane Muller,customer1@enablement.com,REWARDSPLUSCARD,RewardsPlusCard,Rewards Plus card email
CUST8997,Janessa Zboncak,customer1@enablement.com,REWARDSPLUSCARD,RewardsPlusCard,Rewards Plus card email
CUST4205,Nathaniel Block,customer1@enablement.com,REWARDSCARD,RewardsCard,Rewards card email
CUST3526,Angelica Collins,customer1@enablement.com,REWARDSCARD,RewardsCard,Rewards card email
CUST8695,Isabelle Predovic,customer1@enablement.com,REWARDSCARD,RewardsCard,Rewards card email
CUST844,Icie Trantow,customer1@enablement.com,PREMIERREWARDSCARD,PremierRewardsCard,Premier Rewards card email
CUST3105,Jalen Rolfson,customer1@enablement.com,STANDARDCARD,StandardCard,Standard card email
CUST3404,Kyleigh Stroman,customer1@enablement.com,REWARDSPLUSCARD,RewardsPlusCard,Rewards Plus card email
CUST7290,Eldora Schneider,customer1@enablement.com,PREMIERREWARDSCARD,PremierRewardsCard,Premier Rewards card email
CUST6031,Clotilde Balistreri,customer1@enablement.com,STANDARDCARD,StandardCard,Standard card email
CUST4730,Verna D'Amore,customer1@enablement.com,REWARDSCARD,RewardsCard,Rewards card email
CUST4185,Laron Price,customer1@enablement.com,REWARDSPLUSCARD,RewardsPlusCard,Rewards Plus card email
CUST4321,Howard Feeney,customer1@enablement.com,REWARDSPLUSCARD,RewardsPlusCard,Rewards Plus card email
CUST1186,Norma Bechtelar,customer1@enablement.com,STANDARDCARD,StandardCard,Standard card email
CUST3265,Omari Bogan,customer1@enablement.com,STANDARDCARD,StandardCard,Standard card email
CUST3351,Bart Durgan,customer1@enablement.com,REWARDSCARD,RewardsCard,Rewards card email
CUST2066,Unique Marquardt,customer1@enablement.com,STANDARDCARD,StandardCard,Standard card email
CUST6392,Kaitlyn Spinka,customer1@enablement.com,REWARDSCARD,RewardsCard,Rewards card email
CUST9109,Javonte Rodriguez,customer1@enablement.com,REWARDSPLUSCARD,RewardsPlusCard,Rewards Plus card email
CUST2722,Charlene Conn,customer1@enablement.com,STANDARDCARD,StandardCard,Standard card email
CUST1287,Gilbert Bergnaum,customer1@enablement.com,PREMIERREWARDSCARD,PremierRewardsCard,Premier Rewards card email
CUST8053,Ransom Adams,customer1@enablement.com,STANDARDCARD,StandardCard,Standard card email
CUST9195,Dejon Little,customer1@enablement.com,PREMIERREWARDSCARD,PremierRewardsCard,Premier Rewards card email
CUST6161,Vallie Kling,customer1@enablement.com,REWARDSCARD,RewardsCard,Rewards card email
```

The file contains the fields as configured in the file template.

Writing action details to a database

Like a file template, you can map an external email treatment to a database template and make the outbound run write details to the database table. The process of creating a database template is similar to creating a file template. Instead of the repository, file path, and file name configurations, you must provide the **Database** name and **Table** name.

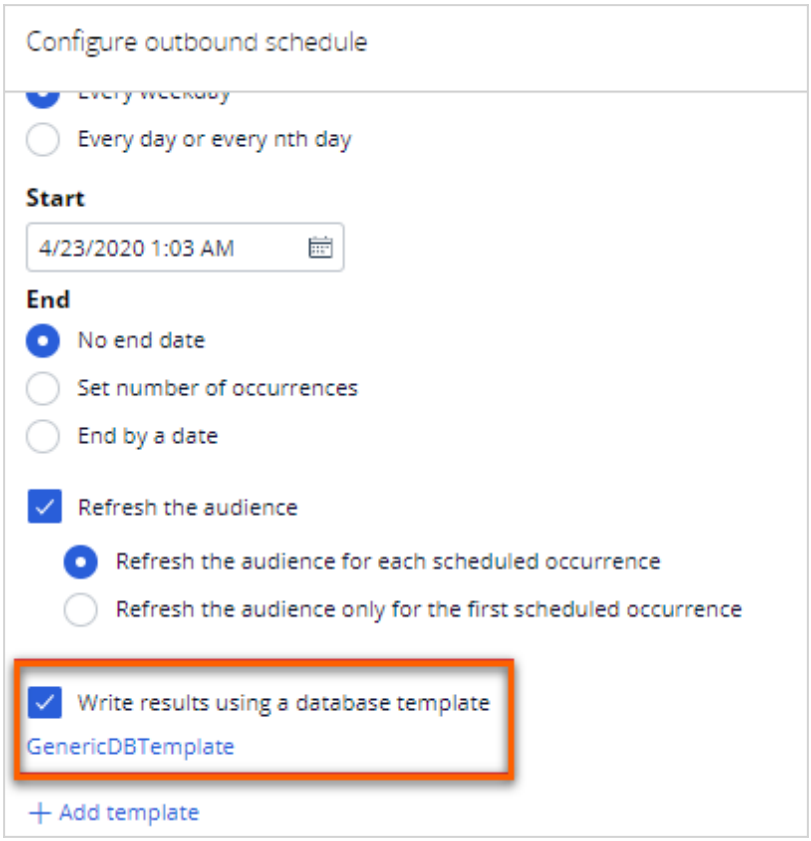


Bypassing action flow processing

In the always-on outbound scenario, you can bypass the action flow processing and write action details to a database table directly with a database template. Use this feature when you do not need to perform multiple steps in the life cycle of an action (such as send an action message, wait for a response, or take appropriate action upon response).

To use this feature, go to **Next-Best-Action Designer**, **Channel**. In the **Primary schedule** section, click the **Gear** icon next to **Recurrence** to access the outbound schedule configuration. Enable the **Write results using a database template** option to add a database template.

> **Note**: Here, you can configure only database templates that have the **Writing option** set to **Append to existing data**.



Capturing responses

When you use an internal email treatment and send the email content directly to the SMTP server, Customer Decision Hub captures the customer response (clicks and impressions). Because Customer Decision Hub does not have direct integration with the SMTP server in the case of external email treatments, the third-party email service provider receives the responses to all emails. In this case, an integration is necessary to send the captured responses to Customer Decision Hub to ensure that the system updates the interaction history and trains the AI models with the received responses. External systems can send the responses using a REST integration, calling the **Capture Response API**, or creating a data flow to process the responses from a file, stream, or database table.