



Amazon Pinpoint

Whitepaper

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Notices

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Abstract

This whitepaper is intended for the solutions architects and developers who are building solutions using Amazon Pinpoint services to be deployed on Amazon Web Services (AWS). It provides architectural guidance and advice on technical design patterns and how they are applied in the context of cloud computing.

Digital Customer Engagement Trends

The customer engagement landscape is continually evolving. With customers becoming more aware and accustomed to all kinds of interaction channels across the digital space, traditional approaches to marketing and engagement are proving ineffective. The customers want more than a transactional exchange before they show any loyalty to the brand. They want to be valued, kept in touch and most importantly, have a personalized experience. The concept is not new and it's possible in seamless ways in 2020 because of the emergence of data, tools, and technologies. Competitive brands and companies are focusing on this very aspect for building great relationships with their customers.

Modern marketing and engagement is completely data-driven and can be run by a three-layered model.

1. Know (who)
2. Personalize (intelligent decisions, what)
3. Engage (Do-It, orchestrate, when)

The first step is "knowing" the customer. While there are tools, software, and methods for understanding the customer, insights from the interactions are the key. As users engage in their phones, desktops, and other touch-points, they leave data signatures behind through visits, gestures, mouse-over, likes, exits, clicks, conversions, and searches. All of these are valuable data points that brands can use for a higher engagement with their customers. Organizations synchronize data from multiple systems and sources (email, commerce, online behavioral data, mobile, social, and other sources to be invented) so that they can engage with actual people, not faceless consumers or cookies.

The "KNOW" leads to the next step, which is "WHAT." This is a decision-making step, where most organizations lean towards the latest technologies, such as AI/ML to make better decisions. The idea is to parse patterns in customer behavior to recommend the next best action.

Let's look at some scenarios.

1. Based on this customer's recent activity and profile.
2. What creative message should we send?
3. Should we put the customer into an email "Nurture" campaign and attempt to influence them over time; or
4. Send them an email offer because it looks like they might be interested in a particular product; or
5. Phone them right then and there, and nudge them to close the deal?

The answers to these questions can be crucial in retaining the customer and closing a deal.

Based on business intelligence developed in the last two steps, organizations must identify channels and orchestrate engagement tasks. This is where organizations "ENGAGE." The orchestration layer coordinates critical "when" and "where" decisions. Decisions such as sending that "\$50 discount on first purchase" offer, or sending the email offer before or after the customer has watched an online video, or sending a reminder if the customer hasn't checked their email in 10 days.

Intelligent orchestration of such tasks makes customer engagement effective and efficient.

The three-step model is not unidirectional. The ability to learn from earlier choices and to refine successive interactions is a continuous process that leads to better results.

The technology space for modern tools that help organizations deploy the above model is diverse. However, to find that one tool that cuts across all requirements and processes is challenging. Organizations must focus on the flexibility and competitiveness of tools that are available to them.

Let's look at some possible capabilities available for organizations.

1. Development, production, delivery, and evaluation of SMS / text, push notifications (for mobile web and mobile applications), and in-app messaging campaigns.
2. Distribution of mobile-optimized personalized content, for example, applications and mobile site commitments.
3. Distribution of location-triggered advertising campaigns or offers.
4. Development, production, and evaluation of mobile promotions.
5. The ability to balance/coordinate various constraints to leverage the full potential of a single campaign or several campaigns or engagements.
6. Allowing advertisers to make trade-offs between various campaign options. For example, SMS, push notification, and email while tracking/controlling the number of interactions per customer or assessing the next best move.
7. Automation of messaging.
8. Information onboarding and incorporation of data from customer information systems, for example, a CRM or Customer Data Platform (CDP).
9. Action Metrics, such as clicks that lead to conversions (mobile platforms and applications).
10. A / B quality verification capability, communication channels, and message/ notification delivery timing.
11. Predictive message analytics (SMS or push notifications) distribution, for example, the best time to send.
12. Multivariate testing of the message delivery (time/frequency) and message/ commitment content.
13. Capability assignment that enables marketers to monitor activities, which lead to conversions, for example, purchase, installation of applications, and viewing videos.

While the list looks long, it highlights the most common requirements for handling customer engagement strategy.

What is Amazon Pinpoint?

Amazon Pinpoint is a service available in the AWS cloud. It helps organizations understand the actions of customers, determine who to target, what messages to send, when to deliver, and monitor the impacts of the customer contact channels. AWS Pinpoint also helps organizations in understanding how the audience reacts to their attempts to communicate.

Let's try to answer simple questions

1. You can try to connect with your users through email, but if they read it, do they click on it?
2. How do you reach out to customers who only provided you with a landline number?
3. What's the open rate for your push notifications that you send to app users?
4. How do you send customized messages to a particular individual?
5. Customer journeys for an organization are captured in separate channels, such as sales/marketing and operations. How can organizations have a singular, 360-degree view of a customer?
6. You have a large data-lake where different customer interactions are stored.

How can you leverage AI?

There are no easy solutions. Organizations may opt-in for off-the-shelf tools that help with some of the above. Having said that, what they need is a strategy and a service built to provide such answers. AWS pinpoint solves many kinds of customer engagement challenges that exist in modern digital marketing practices. It also has a great mix of features and capabilities discussed in the last section.

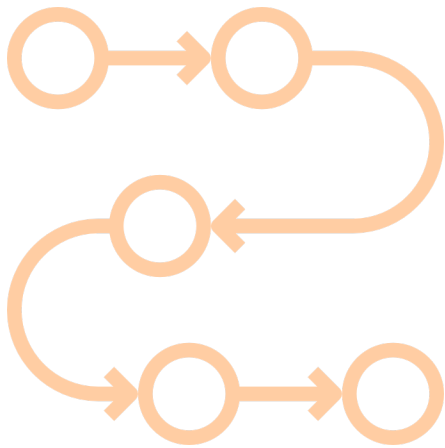
Amazon Pinpoint Feature

Audience Segments

A segment designates which users receive the messages that are sent from a campaign or journey. Organizations can define dynamic segments based on data that's reported by an application, such as an operating system or mobile device. They can build custom target segments from user data collected in other AWS services, such as Amazon S3 and Amazon Redshift, and import target user segments from third-party sources, such as Salesforce via S3.

Messaging Campaigns

A campaign sends tailored messages on a schedule that organizations define. They can create campaigns that send push notifications, emails, text messages, and voice messages.



User Journeys

With journeys, organizations can send messages to customers based on their attributes, behaviours, and activities. When they build a journey, they design an automated workflow of activities that perform a variety of different actions, for example, sending an email to participants, waiting for a certain period of time, or splitting participants based on actions that they take, such as clicking a link in a message.

Templates

Design consistent messages and reuse content more effectively by creating and using message templates. A message template contains content and settings that organizations want to reuse in messages that they send for any of their Amazon Pinpoint projects. Organizations can use message templates in email messages, push notifications, SMS messages, and voice messages.

Personalised Content

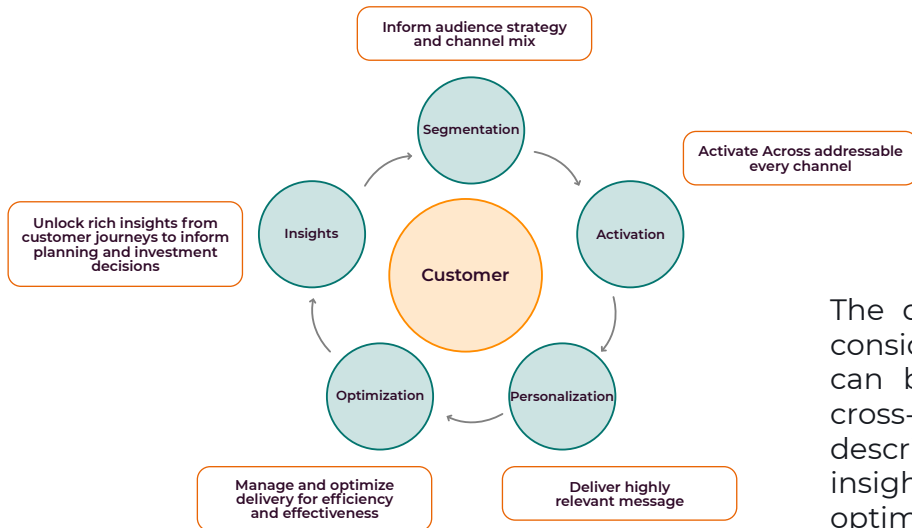
Organizations can send content that is customised for each recipient of a message. Using message variables and attributes, they can deliver dynamic, personalised content in messages that are sent from campaigns and journeys. To streamline development, organizations can use message variables and attributes to add personalised content to message templates. With message templates, the content can come from attributes that are created directly in Amazon Pinpoint or a machine learning model that is created in Amazon Personalise or Sage-maker.

Analyze User Behavior

This gives insight into the audience and the effectiveness of the campaigns and messaging activities by using the analytics that Amazon Pinpoint provides. Organizations can view trends and monitor the message traffic by viewing metrics such as the total number of messages sent for a campaign or project. Through the Amazon Pinpoint API, the application can also report custom data, which Amazon Pinpoint makes available for analysis to the existing data lake using Lambda and Kinesis.

Use Case Drivers For The Amazon Pinpoint Service.

We've identified five general drivers that generate the highest returns and reliably recur across sectors and verticals. These are the essential pillars of data-driven marketing and engagement.



The drivers for modern marketing consider all the ways a data strategy can be used to impact stages of cross-channel marketing; they describe a self-renewing cycle, where insights drive continuous optimisation.

Segments ("Right Person")

Better data about customers offers the ability to segment them precisely and increase precision in reaching them.

Activation ("Right Place")

The ability to match data with partners and connect to every system gives marketers the ability to interact with consumers across every addressable touchpoint.

Personalisation ("Right Message")

Tailoring the delivery of content on a website (site-side optimization), a search ad, or a display ad (dynamic creative optimization) enables marketers to target individual segments of users in an impactful way that increases performance.

Optimization ("Right Time")

Giving each consumer the optimal number and frequency of messages allows a marketer to achieve new levels of spend efficiency.

Insights ("Right Idea")

A better understanding of what the customers want, when they want it, and how it fuels the virtuous circle continually forward.

From segmentation to insights (analytics), the above cycle of value is what progressive marketers pursue. While this is the gold standard since ages, the tools that successfully execute this cycle keep changing with time and trends.

AWS pinpoint wraps this cycle in a workflow that has been designed to reap maximum efficiency. Pinpoint has features, as discussed above, which make this accessible on a single platform. Pinpoint is in a sweet spot inside AWS, such that it has access to a whole range of analytics and machine learning services along with the data in storage, such as S3.

Common use cases

Standard Business Messaging:

Pinpoint is a multi-channel messaging tool. It provides a way to define and capture customer interactions. These interactions can be connected as part of workflows or triggered based on the application's events as one-off actions. Here are some cases where organizations can plug Pinpoint.

- **Reminders**

Instantly send automated appointment reminders to improve the customer experience and reduce no-shows!

- **Resolve conflicts, faster**

If a customer is facing issues, send a note and be empathetic.

- **Stimulate sales**

If a customer is inactive, reach out.

- **Reward loyalty**

If customers have been spending the good word, reach out and throw a coupon in the mail campaign.

- **Eliminate wait times**

Send an ETA if the customer is waiting for a response.

- **Get instant feedback**

Run surveys. Capture feedback on usage.

- **Provide critical alerts**

Any time critical event or alert can be sent out to a large number of customers or one customer.

Customer On-board Journey

In Amazon Pinpoint, a journey is a customised, multi-step engagement experience. When organizations create a journey, they start by choosing a segment that defines which customers will participate in the journey. After that, they add the activities that customers pass through on their journeys. These activities include sending messages or splitting customers into groups based on their attributes or behaviours.

Let's look at a generic customer journey with a product on the email channel.

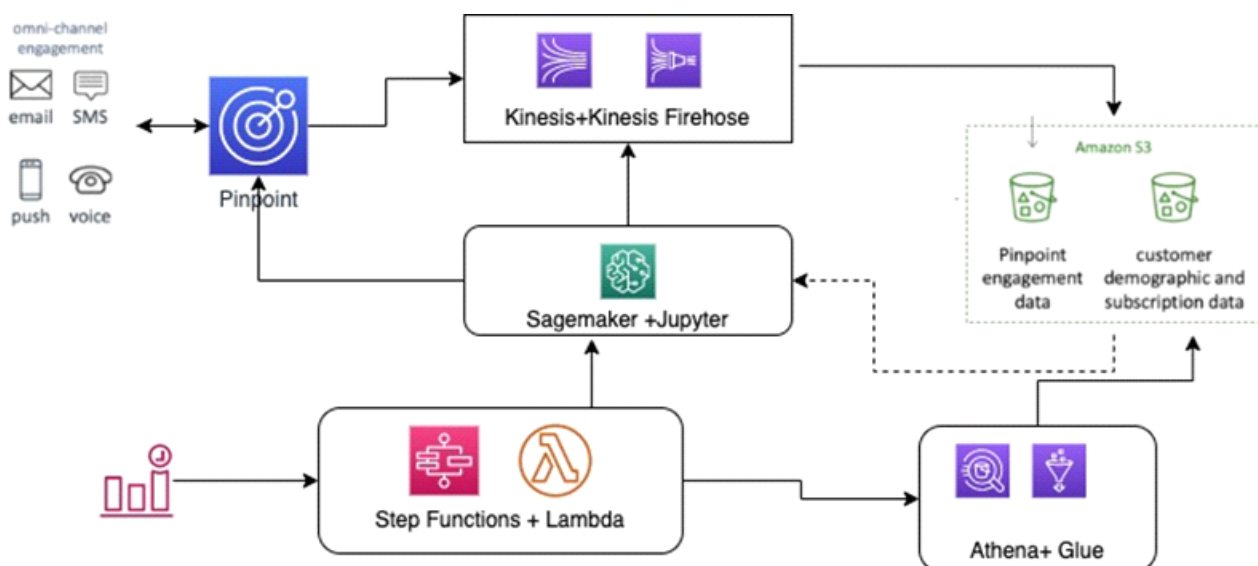
- When customers sign up, organizations can send them email that highlights some of the cool features they'll get by using your service.
- After 1 week, divide customers into two separate groups based on whether or not they opened the email sent to them when they signed up.
- To the group of customers who opened the first message, send an email that contains additional tips and tricks.
- To the group who didn't open the first message, send an email that reiterates the basic information that is mentioned in the first message.

Pinpoint lets organizations execute and track all the above actions and responses in a workflow while providing a dashboard with analytics.

Advanced Use Cases

Customer Churn control with Dynamic Segmentation

Using machine learning to create customer segments in Amazon Pinpoint, organizations can make more relevant and targeted communication experiences for customers, which can lower their churn rates, increase loyalty, and drive higher conversions. Marketers can then use these segments to start sending messages. The event data for those events is then fed back into Amazon SageMaker, where it helps to train and refine the machine learning model.



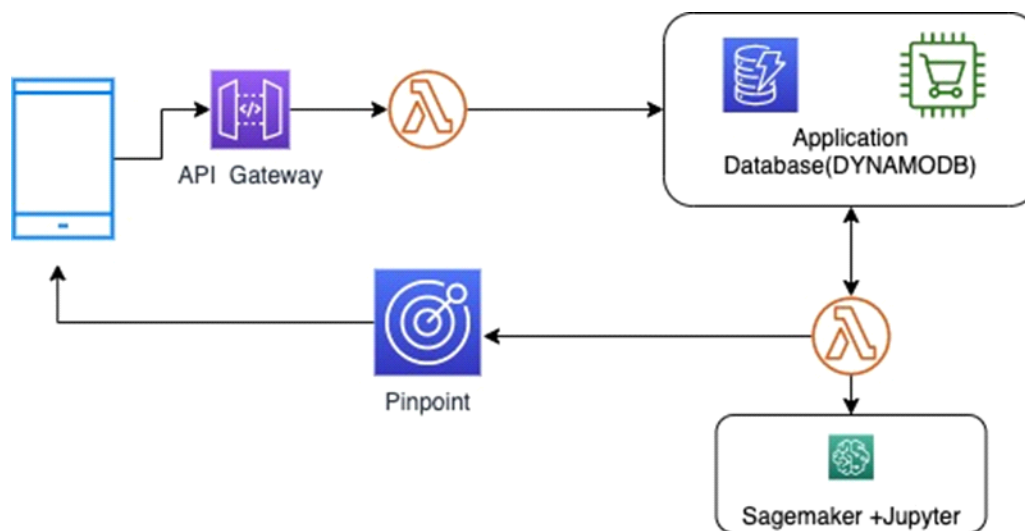
Predictive Segmentation combines Amazon Pinpoint and Amazon SageMaker to automate the process of predicting customer churn and creating tailored audience segments for churn mitigation messaging.

In this solution, customer engagement and segmentation data are sent from Amazon Pinpoint to Amazon S3 buckets via Amazon Kinesis. The data in these S3 buckets is crawled daily and added to an AWS Glue Data Catalog. Separately, a daily process orchestrated by AWS Step Functions uses a series of Lambda functions to query customer data. The process uses Amazon Athena to execute a series of queries against the AWS Glue Data Catalog. Amazon SageMaker uses this data to create predictions based on a trained ML model. This solution can be used to train and deploy a basic churn model.

Advanced Use Cases

Smart Marketing Campaigns with Personalisation:

In the retail sector, many times, companies want to make a personalised recommendation to a customer. For example, depending upon the customer's product selection in the shopping cart, a real-time campaign can be triggered using AWS pinpoint, suggesting certain products based on customer purchase habits or past purchases. It is an excellent example of marketing at the right time and the right place.



Above and similar solutions can be used to deliver next-best-actions, recommendations, or personalised offers using ML stored profiles and clickstreams across all engagement channels.

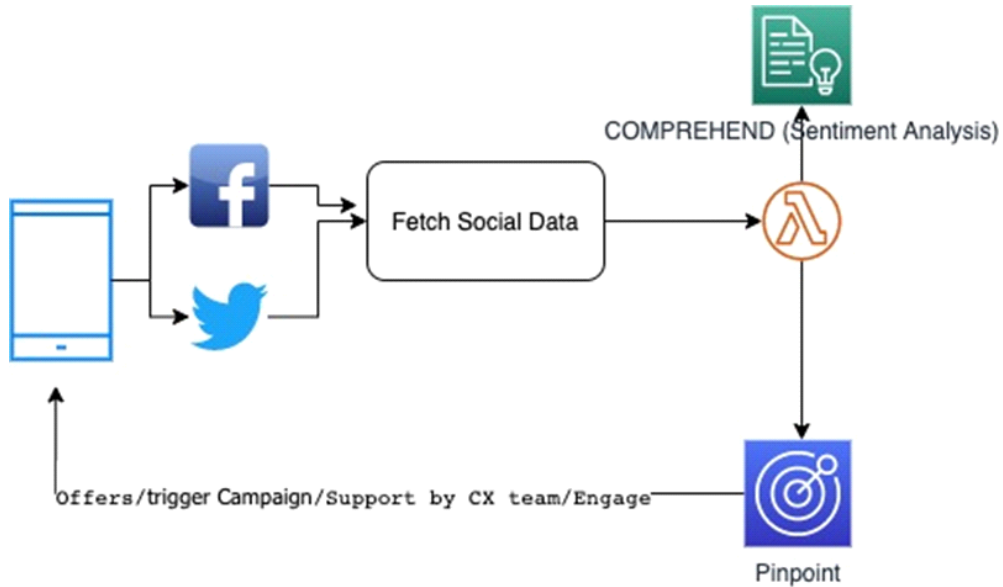
Smart Offers/Campaign Based On Social Sentiment:

Following use case can handle multiple customer engagement scenarios, which are related to customer social interactions.

The flow can be:

1. Identify customers who are influencers and early adopters. Depending upon customer social profile and influence, customers can be reached out and engaged to build loyalty.
2. Tracking and engaging with consumers during events or promotions. During marketing events, companies can join the conversation with their customers by sending messages in real-time based on customers' tweets.
3. Proactively engaging with customers having support issues.
4. Offering discounts or concessions to unhappy customers.

Advanced Use Cases



Social Sentiment based engagement

Above is an indicative AWS solution that can help.

AWS comprehend is a service that helps analyze the sentiment of social content. The fetched social data component in the image can analyze customer profiles and identify potential engagement opportunities.

Getting Started with Amazon Pinpoint

Let's try to create a simple marketing campaign in pinpoint.

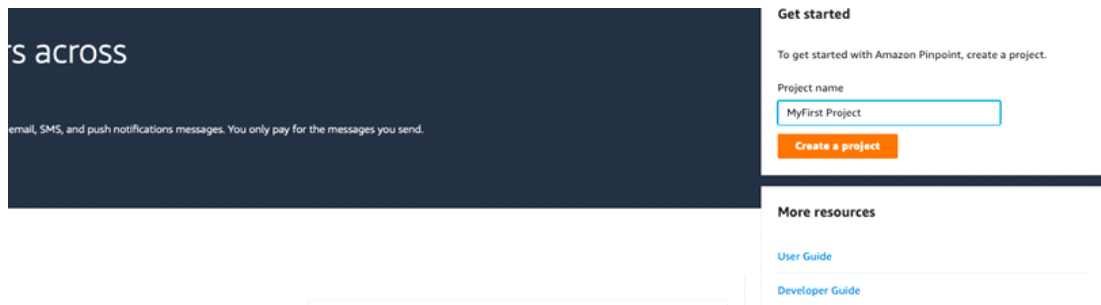
Following is the summary of tasks that must be done in this exercise.

1. Create a Project
2. Add customer contact information into Amazon Pinpoint
3. Create segments that target certain customers.
4. Create messages and schedule campaigns.
5. After sending the campaigns, organizations can use the analytics dashboards that are built into Amazon Pinpoint to see how well the campaigns have performed.

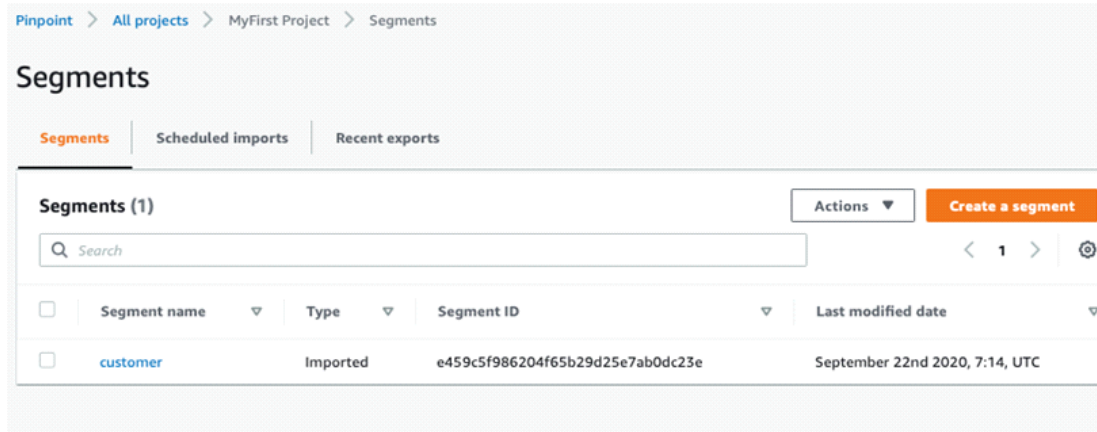
Lets Begin!

Create a Project:

1. Sign in to the AWS Management Console and open the Amazon Pinpoint console at <https://console.aws.amazon.com/pinpoint/>.
2. If this is your first time using Amazon Pinpoint, you see a page that introduces you to the features of the service.
3. In the Get started section, enter a name for your project and then choose Create a project.



4. Check the Screenshots below.
5. On the Configure features page, next to Email, choose Configure.
6. For email address, type an email address that you want to use to send email. For example, you can use your personal email address or your work email address. Choose Verify.
7. Wait for 1–2 minutes and then check the inbox for the email address that you specified in step 6. You should see an email from Amazon Web Services (no-reply-aws@amazon.com) with the subject line "Amazon Web Services – Email Address Verification Request in the region."

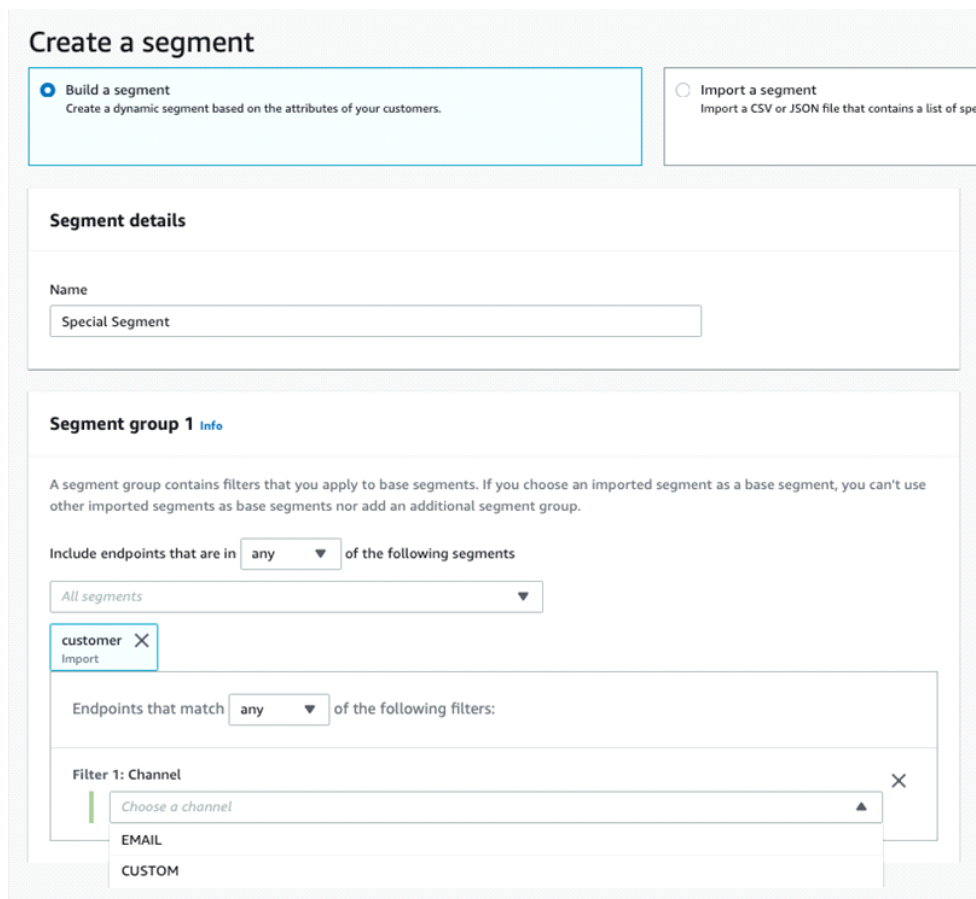


"RegionName", where RegionName is the name of the AWS Region that you're configuring Amazon Pinpoint in.

8. Open the email and click the link in the body of the email.
9. Return to the Amazon Pinpoint console in your browser. On the set up email page, choose Save.

Import Customer Data and Create a Segment

A *segment* is a group of customers that share certain attributes. For example, a segment might contain all customers who use version 2.0 of an application on an Android device, or all customers who live in Singapore. When organizations create a campaign, they have to choose a segment to send the campaign to.



Segments can be Dynamic or Static. This is a basic example of creating a static segment by importing data.

Create a CSV File with following format

ChannelType,Address,Attributes.Address,Location.Country,User.UserAttributes.FirstName,User.UserAttributes.LastName,User.UserAttributes.Company,User.UserAttributes.MailingStreet1,User.UserAttributes.MailingStreet2,User.UserAttributes.MailingCity,User.UserAttributes.MailingRegion,User.UserAttributes.MailingCountry,User.UserAttributes.PostalCode,OptOut,Demographic.Timezone,Demographic.Locale,User.UserId,User.UserAttributes.RefNumber

Sample Entry



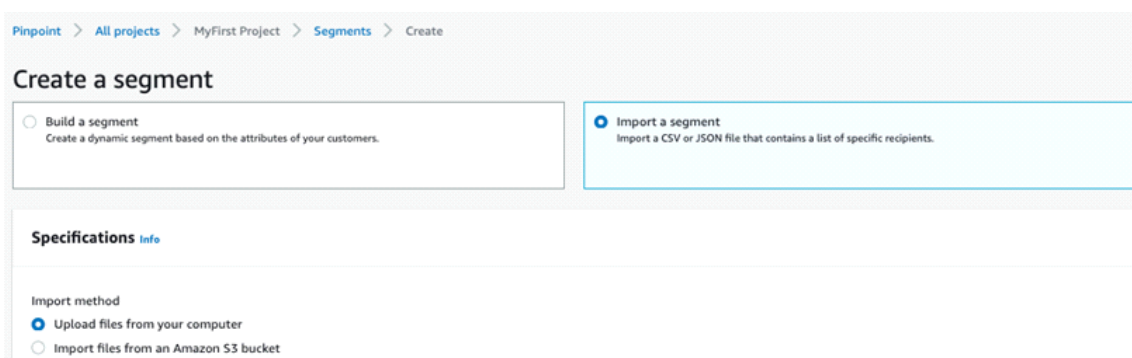
EMAIL,<verified email>,<verified email>,<country>,<your name>,<your name>,Example Inc,<your postal address>,<your postal address>,<your city>,<your region>,<your country>,<your postal code>,NONE,<your tz_database value>,<your locale code>,<a user ID>,<a reference code>

You can have a number of contacts added here or take existing customer list and put it in this format.

At a minimum, you have to provide information for the ChannelType, Address, and User. UserAttributes. Company columns.

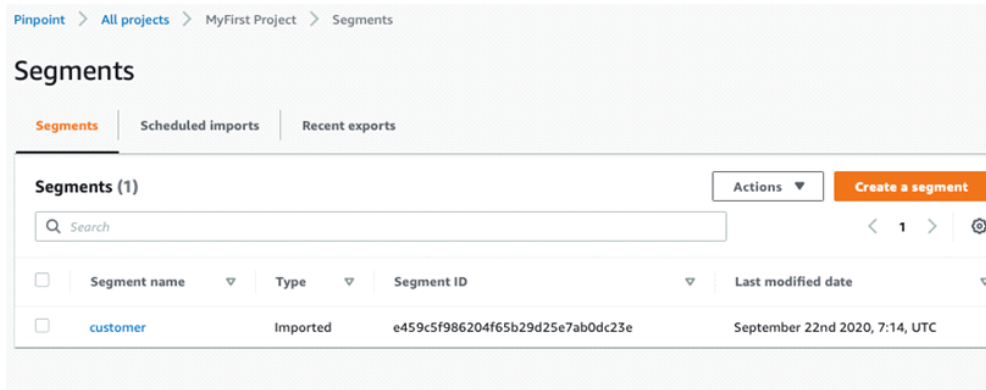
After filling the data, save it as Customer.csv and import this file into Pinpoint.

1. In the Amazon Pinpoint console, in the navigation pane, choose 'segments'.
2. Choose 'create a segment'.
3. On the create a segment page, choose 'import a segment'.
4. In the specifications section, under import method, choose 'upload files from your computer'.
5. Select files. Navigate to the Customer.csv file that has been created and modified above.
6. Choose 'create a segment'. Amazon Pinpoint copies the file from your computer and creates a segment. Wait for about 1 minute while the import completes. You can see a segment named 'customer is created'.

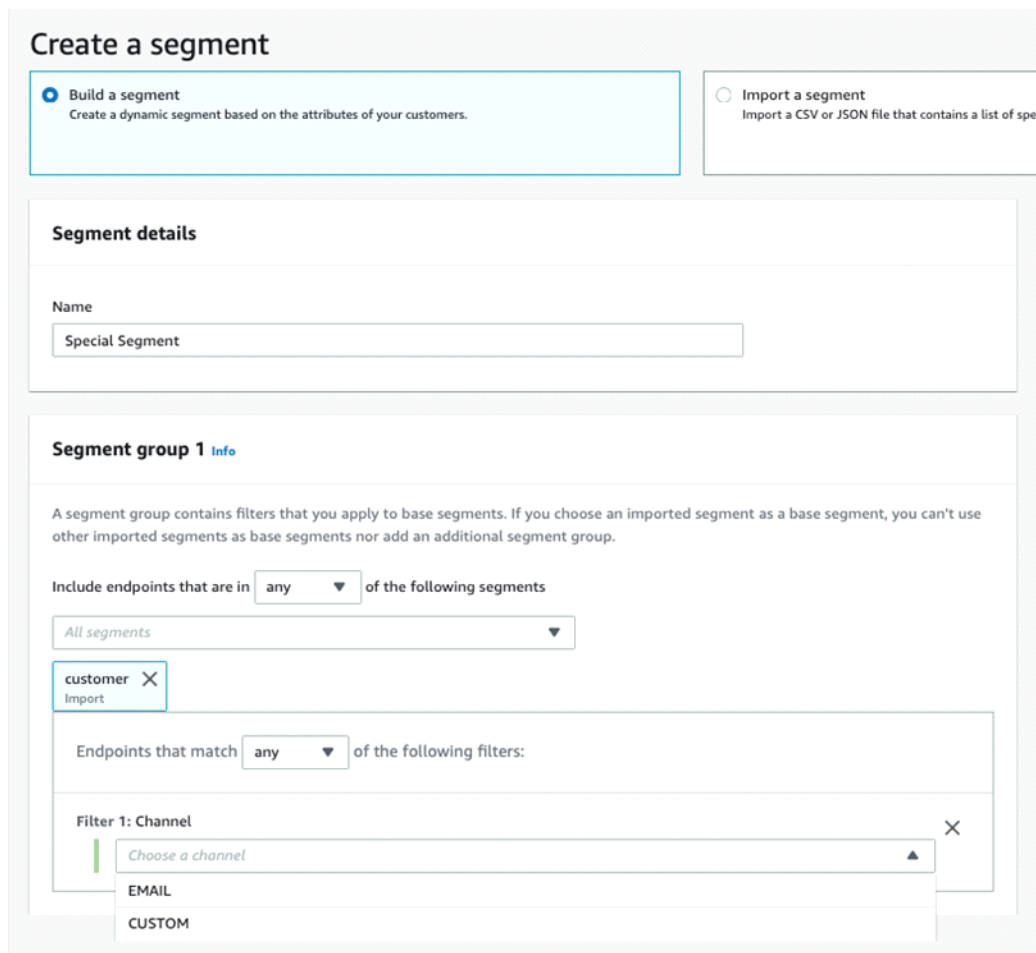


Let's Refine our Segment

1. On the segments page, choose 'create a segment'.
2. On the create a segment page, choose 'build a segment'.
3. For name, enter a name for the segment.
4. Under the segment group 1, do the following.



- Next to Include endpoints that are in any of the following segments, choose the customer segment that is created in the previous step.
- Under the 'add filters to refine your segment', from the menu, choose 'filter by channel'.
- Next to 'endpoints that match', choose 'all'.
- For the channel, choose 'EMAIL'.



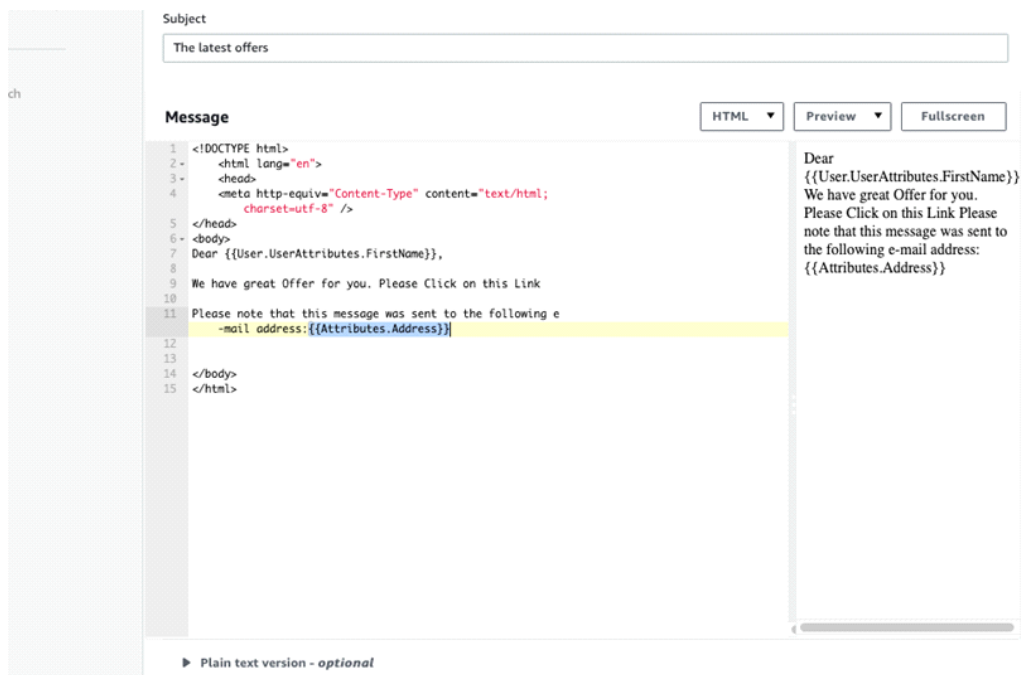
- Under the 'add filters to refine your segment', from the menu, choose 'filter by the user'.
- In the user filter, use the menu to choose company. Next, use the 'choose values menu' to choose the unique company name.
- Choose 'add an attribute or metric'.
- In the 'new filter', use the menu to choose 'first name'. Next, use the 'choose values menu' to choose your first name.
- Choose 'create segment'.

Create and Schedule a Campaign

A campaign is a messaging initiative that engages a specific audience segment. A campaign sends tailored messages on the days and times that you specify.

To create the campaign and choose a segment.

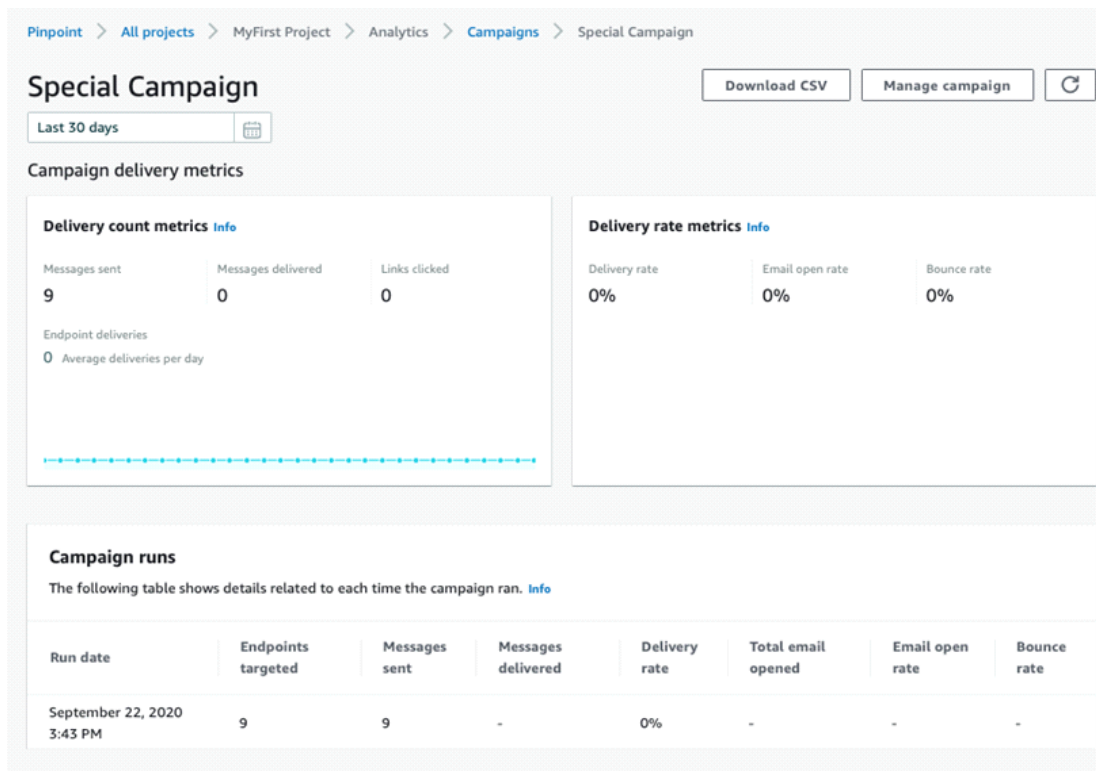
1. In the Amazon Pinpoint console, in the navigation pane, choose 'campaigns'.
2. Choose 'create a campaign'.
3. Under 'campaign details', for campaign name, enter a name for the campaign.
4. For campaign type, choose 'standard campaign'.
5. Choose a channel for this campaign, choose 'email'.
6. Choose 'next'.
7. On the 'choose a segment page', choose 'use an existing segment'. Then, for the segment, choose the targeted segment that you created as a "special segment". Choose 'next'.
8. On the 'create your message page', under message content, choose 'create a new message'.
9. For 'subject', enter a subject line for the email.
10. Under 'message', you can use all attributes from the customer data to personalise the campaign. We have used the following
`{{User.user attributes.FirstName}}{{Attributes.Address}}`
 Choose 'next'.
11. On the 'choose when to send the campaign page', choose 'at a specific time'. Then, under 'choose when the campaign should be sent', choose 'immediately'. Finally, choose 'next'.
 On the 'review and launch page', review all of the details of the campaign. When you're ready to send it, choose 'launch campaign'.



View Campaign Analytics

To view the campaign metrics:

1. Open the Amazon Pinpoint console at <https://console.aws.amazon.com/pinpoint/>.
2. On the 'all projects page', choose the project that you used to send the campaign.
3. In the 'navigation pane', under analytics, choose 'campaigns'.
4. In the 'campaigns' section, select the created campaign.
5. On the metrics page, you can see all the information.



Some of the metrics available are:

1. **Delivery Count Metrics** – This section provides information about the delivery of the messages sent from your campaign. It includes the following information:
 - a. Messages sent.
 - b. Messages delivered.
 - c. Links clicked.
 - d. Endpoint deliveries.
2. **Delivery Rate Metrics** – This section shows the overall delivery and response rates for the messages sent from your campaign. It includes the following information:
 - a. Delivery rate.
 - b. Email open rate.
 - c. Bounce rate.
3. **The Campaign Runs** – This section shows information specific to each time the campaign ran. Because you can use Amazon Pinpoint to create recurring campaigns, this section shows information for several campaigns runs.
 - a. Endpoints targeted.
 - b. Total of emails opened.

Happy Pinpointing !!!

Conclusion

Amazon Pinpoint offers a single API layer, CLI support, and client-side SDK support to extend the application communication channels with users. The eligible channels include email, text messaging, mobile push notifications, and custom channels.

Amazon Pinpoint also provides an analytics system that tracks the application user behaviour and user engagement. With this service, developers can learn how each user prefers to engage and personalize the user experience to increase user satisfaction.

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