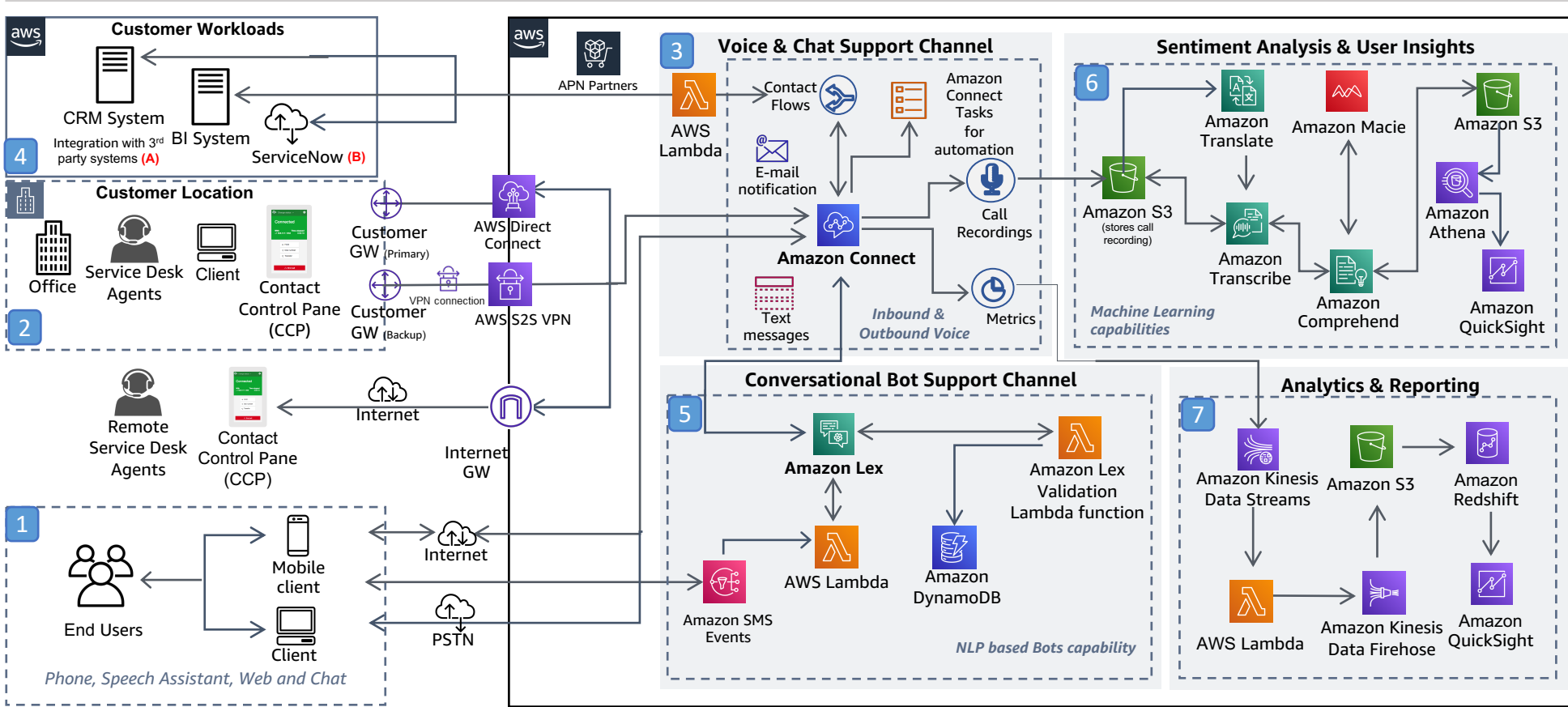# Cloud-native Contact Center Reference Architecture for Multilingual IT Service Desk

Use AWS building blocks for modernizing the IT service desk with an intelligent, omnichannel-based contact center capability using **Amazon Connect**. This reference architecture supports voice, web, mobile, and conversational chatbot channels, including end user sentiment analysis, automation, real-time analytics dashboard, and reporting.

Customer Workloads — CRM System, BI System, ServiceNow (B). Integration with 3rd party systems (A)

Customer Location — Office, Service Desk Agents, Client, Contact Control Pane (CCP), Customer GW (Primary), Customer GW (Backup), AWS Direct Connect, AWS S2S VPN, VPN connection

Remote Service Desk Agents, Contact Control Pane (CCP), Internet, Internet GW

End Users — Mobile client, Client, Internet, PSTN. *Phone, Speech Assistant, Web and Chat*

APN Partners

3 — Voice & Chat Support Channel
AWS Lambda, Contact Flows, E-mail notification, Text messages, Amazon Connect, Amazon Connect Tasks for automation, Call Recordings, Metrics. *Inbound & Outbound Voice*

6 — Sentiment Analysis & User Insights
Amazon Translate, Amazon Macie, Amazon S3, Amazon S3 (stores call recording), Amazon Transcribe, Amazon Comprehend, Amazon Athena, Amazon QuickSight. *Machine Learning capabilities*

5 — Conversational Bot Support Channel
Amazon Lex, Amazon Lex Validation Lambda function, Amazon SMS Events, AWS Lambda, Amazon DynamoDB. *NLP based Bots capability*

7 — Analytics & Reporting
Amazon Kinesis Data Streams, Amazon S3, Amazon Redshift, AWS Lambda, Amazon Kinesis Data Firehose, Amazon QuickSight

A. **Amazon Connect** is an open platform, providing out-of-the-box integrations for leading CRM tools such as Salesforce and Zendesk, Workforce Management (WFM) tools, and analytics tools. Using **Lambda**, customers can create their own integration to their existing ITSM or CRM products. To learn more about various APN partners who have created a custom integration connector with their product to leverage **Amazon Connect**, see Amazon Connect Partners.

B. **Amazon Connect Integration** offers a Quick Start guide to organizations using ServiceNow as their ticketing tool. Organizations can use **Lambda** functions to jumpstart their integration of ServiceNow and **Amazon Connect**, resulting in one unified ITSM UI for SD agents and end users.

1. This reference architecture provides an omnichannel experience for end users calling the IT Service Desk (SD) using one or more support channels of their choice, such as a landline phone using public switched telephone network (PSTN), a softphone from their client device, or from their smartphone using an internet connection.

2. The SD agent, working from a corporate office, uses a web-based softfone (CCP) from an internet browser to connect to **Amazon Connect** and interact with end users by answering calls, performing web chats, or setting their status in the CCP UI. SD agents can also use a traditional telephone service using the PSTN.

3. SD agents can also connect to **Amazon Connect** remotely through internet connectivity from their home office. All data exchanged with **Amazon Connect** is protected in transit between the user's web browser and **Amazon Connect** using TLS 1.2 or above encryption standards.

4. **Amazon Connect** provides inbound/outbound voice channel, web, and mobile chat capabilities with skills-based routing. As part of the initial configuration, **Amazon Connect** enables you to claim the phone number and define the support queues, contact flows, and routing profiles, which can notify users through email or SMS about the status of the ticket. Using **Connect Tasks**, SD agents and managers can automate manual tasks such as user follow-ups, setup reminders, and more.

5. **Amazon Connect** integrates with customers' customer relationship management (CRM) or any business intelligence (BI) applications hosted in AWS or an on-premise location, or any of the existing IT Service Management (ITSM) ticketing tools like ServiceNow to pull caller information. This is achieved either by using connectors developed by the AWS Partner ecosystem, or by creating a custom integration connector using **AWS Lambda**.

6. Further integrating **Amazon Connect** with **Amazon Lex**, you can create intelligent conversational chatbots to automate high volume user contacts without increasing the number of SD agents, and without compromising end users experience. End users are able perform self-service tasks such as password change, procurement of IT accessories, or scheduling meetings using natural conversation language with **Amazon Lex**. In conjunction with the contact flows feature in **Amazon Connect**, businesses can turn automated interactions into natural conversations to improve end-user experience.

7. To improve the efficiency and quality of the contact handling, IT SD can gain end-user insights using **Amazon Transcribe** and **Amazon Translate** to convert speech to text from the voice recording stored in **Amazon S3**. By leveraging **Amazon Comprehend**, SD agents can then analyze the key topics and relationships in any given text using **Amazon Athena**. **Amazon Macie** can be used to protect sensitive data stored in the call recording, and focus on the incident or problem context. With this analysis, the IT SD can identify user sentiments, and address the common issue or a trend that impacts end users' productivity or satisfaction.

8. **Amazon Connect** enables the SD agents to see real-time metrics such as SD agents logged in, call abandon rates, number of calls handled, SD agent activity status, and so on. This is done by analyzing contact trace records (CTRs) using **Amazon Kinesis Data Streams** and **Lambda** functions, storing them in **Amazon Redshift**, and viewing them on the **Amazon Quicksight** dashboard.

AWS Reference Architecture