twilio

Twilio Flex: The Most Flexible Cloud Contact Center

OVERVIEW

Your imagination is the only limit

Introduction to Twilio Flex

Twilio Flex is a programmable contact center platform created to:

- Tailor the contact center to your business needs to stay ahead of customers' changing expectations.

- Leverage modern tools and modules to rapidly deploy new functionality at your own timelines.

- Unlock innovation by providing you control to create, change and extend every part of Flex.

- Improve customer engagement by building what your business and customers want. Either by adding new channels to interact with customers, or integrate the latest points of record to your customer service, or simply incorporating your business strategies into workflows and the routing engine.

- Offer elasticity giving organizations the ability to scale up or down based on their demand.

Programmability

Programmability is one of the main benefits that help to tailor your contact center to fit your business needs. In the next section, we will cover this benefit across each layer that makes up the Twilio Flex stack.

Programmability gives you granular control over each module (channels, interface, routing, workflows, etc.) that make up the Flex stack. Through a series of front-end SDKs and APIs, developers have the option to use code to access every layer of the contact center platform (channels, reports, integrations, routing, etc.) to tailor the communication experience.

We think about programmability like a white canvas that allows you to design, plan, test and change exactly what you need, as your business evolves. This gives you the ability to build customer and agent experiences exactly how you need them. We have talked to multiple organizations that feel locked into a solution that does not meet their needs and others that had to alter their business to fit the technology.

Our programmable contact center is a platform for innovation that no other provider can match. Twilio Flex programmable features are extensible via in-house developers or dev partners based on API invocation.

Here are a few examples of what we mean with a programmable contact center:

- **Channels.** Add your own custom channels, and manage, route, and report all of them through Flex. i.e. Social media feeds, tasks generated by CRM, ERP flows or even detecting events based on IoT devices.

- **Interface.** Rip it apart, add, remove, or personalize anything you need. Configure the look and feel, brand it, or if you don't like the options that come out of the box, get into the code and change the pixel on the screen.

- **Workflows.** Integrate data from your own custom sources to provide contextual intelligence to agents. Add your own widgets to the communication flow using a NodeJS-based serverless environment.

- **Routing.** Integrate contextual information from your own data sources to build custom routing logic.

Besides the modularity of Twilio gives you the facility to modernize your existing infrastructure without a rip-and-replace. You can improve your engagement experience by adding new functionality at your own pace while reducing complexity of unnecessary upgrades.

- **Crisis Management.** Enable your agents to work remotely.

- **Improve customer experience.** Adding new channels for alerts, notifications and multichannel customer service.

- **Boost operational efficiency through service automation.** Leverage conversational self-service and chatbots.

- **Improve employee engagement.** By integrating multiple systems into a single interface.
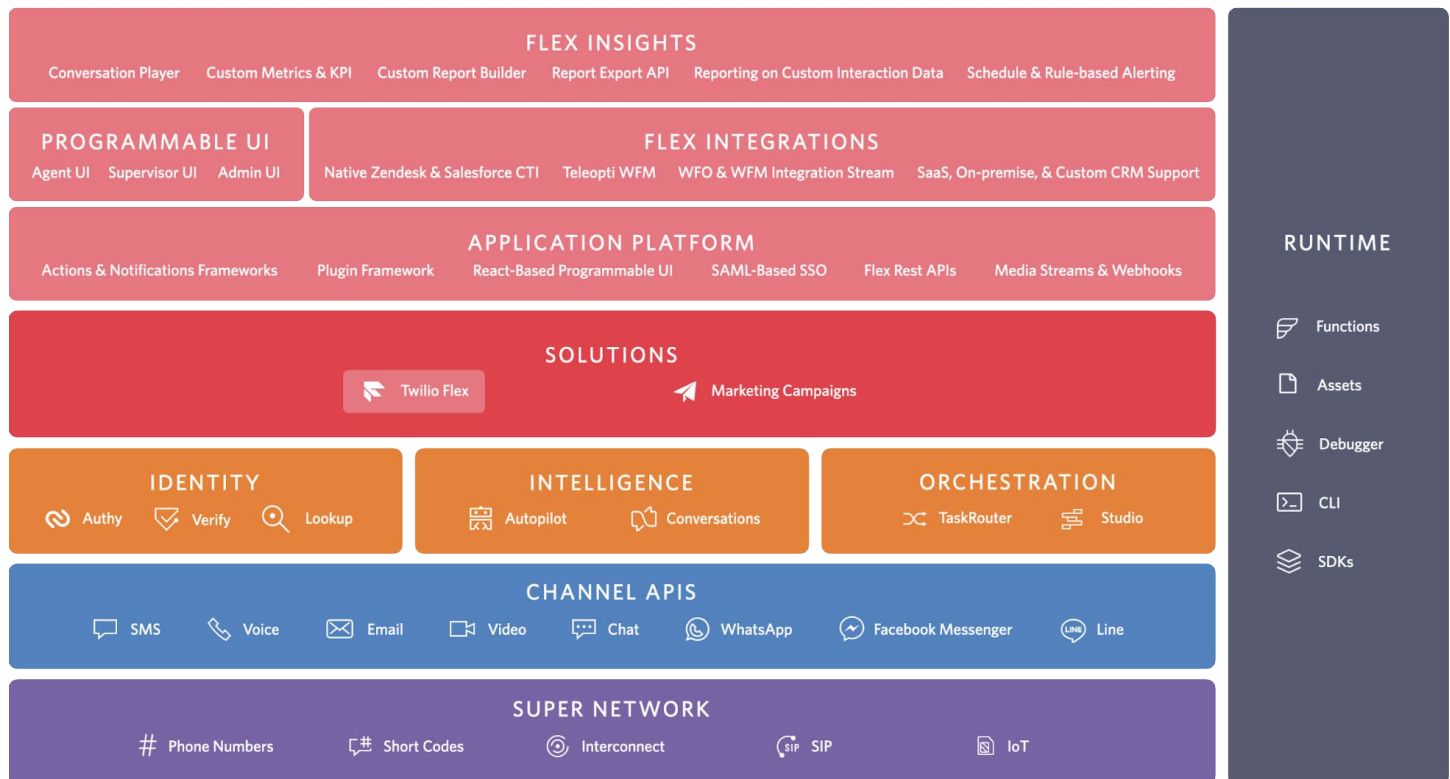
For example:

A company needs new channels on its existing contact center. However, this may imply an expensive and complex upgrade. In this situation, an augmentation approach using Flex could be a fast and cost efficient way to improve their existing customer service.

Twilio Flex Stack

This section covers the top capabilities and benefits of Twilio Flex.

FLEX INSIGHTS

Conversation Player   Custom Metrics & KPI   Custom Report Builder   Report Export API   Reporting on Custom Interaction Data   Schedule & Rule-based Alerting

PROGRAMMABLE UI

Agent UI   Supervisor UI   Admin UI

FLEX INTEGRATIONS

Native Zendesk & Salesforce CTI   Teleopti WFM   WFO & WFM Integration Stream   SaaS, On-premise, & Custom CRM Support

APPLICATION PLATFORM

Actions & Notifications Frameworks   Plugin Framework   React-Based Programmable UI   SAML-Based SSO   Flex Rest APIs   Media Streams & Webhooks

SOLUTIONS

Twilio Flex   Marketing Campaigns

IDENTITY

Authy   Verify   Lookup

INTELLIGENCE

Autopilot   Conversations

ORCHESTRATION

TaskRouter   Studio

CHANNEL APIS

SMS   Voice   Email   Video   Chat   WhatsApp   Facebook Messenger   Line

SUPER NETWORK

Phone Numbers   Short Codes   Interconnect   SIP   IoT

RUNTIME

Functions

Assets

Debugger

CLI

SDKs

3

Intelligent routing

Taskrouter, our routing engine, manages the workflow rules to define which channel, activity, or event is transferred to an agent or to another process by utilizing custom attributes, priority, ordering, time-outs, and re-queuing, among others.

Routing can include:

- Any data collected from external systems (i.e. CRM) to empower the agent selection

- Business rules based on your day-to-day operations, such as location, time zone, unexpected events and overflow calls

- Skills-based routing, custom logic, and multi-dimensional attribute routing

- Routable task from an external system, for an agent to service an open claim or any other process

- Voicemail routing using Twilio voicemail or transfer data to any voicemail system that supports SIP interoperability

In contrast to other solutions, our routing engine allows you to **create and program all these business rules** within Flex.

Self-service

Create self-service menus with a drag-and-drop visual builder that offers a variety of methods, channels and automation using bot capabilities. Twilio's bots are designed to be conversational and to deliver a more human-like experience.

Traditionally, when people think about self-service, they relate it to voice only. However, with Twilio Studio, you can manage **self-service across any digital channels supported on your contact center** (SMS, chat, messaging apps, video, etc), perform automatic transactions and lookups. Build your inbound and self-service experience for all channels in one place.

Other ways to leverage your conversational self-service are:

- Leverage Twilio <Say> for text-to-speech activities. It supports 25+ languages and dialects. You can choose between using *man, woman, Alice or Amazon Polly* voices. In addition, we support Amazon's neural TTS and Speech Synthesis Markup Language (SSML) that allows developers to use XML-based markup language for assisting the generation of high quality synthesized speech.

- Speech recognition, with Twilio <Gather>, provides support for DTMF and speech input for 100+ languages and dialects. An optional enhanced mode gives IVR designers access to a premium transcription engine with pre-trained data for advanced use cases.

Proactive customer engagement

With Flex programmable dialpad, organizations are able to **build and personalize their contact outreach** solution. From an outbound call to follow up on customers' needs to a click-to-call directly from your preferred applications, or even leveraging an E.164 number typed on digital channels and escalating that interaction to a voice conversation.

You can build proactive customer engagement using callback and automated text or call services. For a callback service, the way you can define and build a conditional check and estimated wait time formula for the queues involved in the process, is all programmable. You have the alternative to also offer any digital channel proactively when the call volumes exceed voice agent capacity.

If you manage campaigns for collections, telemarketing, customer service or any other outreach interaction, your developers can leverage our API to build preview or power dialing needs, or even leverage our partner ecosystem to implement a progressive or predictive dialer.

Artificial Intelligence driven conversations

Build AI chatbots powered by machine learning to help your users interact with your application through natural conversations over any channels (voice, SMS, chat, messaging apps, and even your custom-built channel) and to provide an intelligent guidance to your customers.

With Autopilot, you can hand-off messaging conversations from a bot to human agents to give agents the entire context of the customer conversation. The ability to hand-off tasks from a bot to a human agent is critical to building bot experiences that don't frustrate your users. There will be situations your bot is not equipped to handle the ask, and the conversation should be escalated to an agent. You can build hybrid customer journeys where the bot handles a part of the customer request before handing off to an agent.

Autopilot uses a task-driven programming model that maps the user outcomes, such as booking an appointment or changing a flight. It uses Natural Language Understanding (NLU) to detect what your users are saying and matches it to the appropriate task. Instead of requiring your users to provide exact responses or keywords to interact with your bot, the chatbot can be trained to parse and/or recognize similar phrases or words.

Twilio also integrates with Google CCAI to deliver virtual agent and agent assist through NLU, and to dynamically present information to the agent interface based on customers' conversations.

Channels

Today, more than ever, offering the correct channels to support your customers requests is critical. You can leverage any channel you need – trusting that routing, reporting, and management are controlled by Twilio Flex.

Twilio provides the mainstream channels we encounter today, as well as **delivering access to emerging channels that end users expect** when engaging with organizations either to send notifications, provide self-service chatbots or field live agent text interactions.

- **Voice.** Let customers reach you by phone, or schedule a call back from your website or app. Phone calls can also be delivered to a SIP endpoint or using an E.164 routable phone number. Besides, agents can collect customer payment information in a PCI-compliant manner on a Twilio voice call.

- **SMS.** Provide direct messaging between customers and agents for multiple use cases such as alerts, notifications, customer support, conversational self-service, NPS (Net Promoter Score) surveys among others.

- **Chat.** Complete transactions and transfer rich, context-aware data over secure web chat.

- **Messaging Apps.** Look for contact centers that allow you to add new channels as they become popular, such as Facebook Messenger and WhatsApp. Organizations can incorporate their own systems to provide social media monitoring and aggregation tools.

- **Bring Your Own Channel.** Allows organizations to integrate their preferred channel (i.e. their own web chat) and route, manage and report it within Flex.

- **Email.** Build email or program the integration of specific email platforms (Office 365 email or Gmail) to the contact center while defining the rules, filters and support for the number of sessions or threaded conversations.

- **Video.** Enable face-to-face conversations for identity verification, content sharing, or visual problem resolution.

Managing channel rules

Priorities can be assigned to specific channels to manage them based on attributes to handle real-time and asynchronous conversations differently based on the business SLAs. Example: SMS is less time sensitive than chat.

Flex also allows you to configure capacity and assignment rules to determine how many tasks per channel each agent can handle. Agent utilization is defined by the influx and ease of digital channels based on your unique business needs. We recommend allowing agents to receive one call and X number of digital interactions simultaneously. For example: 1 call and 8 chats.

However, based on your needs you can define other rules such as:

- Preventing an agent from receiving a chat when handling a voice call

- Let agents receive a call when working on a single chat

- Preventing agents from receiving a call, if they are working on 2+ chats

Integrations

Flex can be integrated with the tools that power your business whether they are SaaS, on-premise, or even custom. Any business application that has an API or SDK interface is compatible to integrate with Flex (i.e. ServiceNow, Microsoft Dynamics, knowledge bases, ERPs, billing systems and homegrown environments among others).

Flex includes a set of native integrations for Zendesk and Salesforce (Classic and Lightning Experience integrations are supported).

These are some of the capabilities available:

- **Search and Screen Pop.** Use customer information gathered (self-service, web form or any channel) to automatically lookup and display relevant tickets or user records.

- **Interaction logging.** Automatically log Flex interactions into a related ticket or user record.

- **Context Switching.** To a related ticket or user when agents multitask.

- Enable Flex Voice Recording for Inbound voice calls.

- Configure automatic ticket or User Creation, and Navigation in response to Customer Engagements.

- **Click to Dial.** Let agents place an outbound call with the click of a button.

Flex customers can also build their own integration through the Flex plugin framework. This framework listens to events and performs actions across any channel based on the task lifecycle.

For example:

- Listen to events triggered in Flex during a customer conversation (task created, agent reserved, task ended, etc.), and perform an action (screen-pop the customer profile) by calling relevant CRM functions.

- Listen to events in a point of record (adding a new lead into a campaign) and perform actions in Flex (create an outbound voice task and push it to a campaign queue).

With Twilio Flex, you do not need to worry about being limited to a certain number of integrations. We understand that some organizations rely on a plethora of systems. If there is an API to access them, then all that data can be queried to provide information to the agents through a single pane of glass.

Media streams

Traditional contact centers need a testing protocol to integrate to specific tools. Companies are forced to only use the applications tested and validated by the contact center vendor.

In contrast, with Media Streams, organizations have access to real-time media to control and extend their voice application via real-time transcription, natural language understanding (NLU), sentiment analysis, voice biometrics, and even AI-driven knowledge base. Media Streams is bi-directional, which means that customers can stream audio in real-time from Twilio to apps and also from apps back to Twilio.

For example: organizations can use Twilio Media Streams and third party tools (Calabrio, Google CC-AI, Gridspace, etc.) to analyze the conversation between customer and agent, and trigger actions either manual or automated based on what has been detected. Take transcripts of digital interactions, and analyze them to provide a level of sentiment by integrating them to tools of your choice (i.e. Calabrio or other WFO systems).

Call recording

Perform dual channel recording (to identify the outside caller and the internal party), recording playback, crosstalk detection, silence detection and basic quality management. For messaging channels, the message transcript is also available in the recording

interface for supervisors to review and score. Once recordings have been captured and stored in Twilio's cloud infrastructure, organizations can access and delete the recording at any time using the Twilio recording API. Once the recording is deleted, it won't be available for playback within Flex. You can use our recording API to build a recording management application to address the diverse needs across the business.

In addition to the native Flex recording options, organizations can integrate Flex with a third-party recording solution to get advanced quality management, transcription, analytics and agent screen recording.

Workforce optimization and workforce management integrations

Twilio Flex offers the ability to integrate with your vendor of choice (Calabrio, Aspect, etc..) to collect and analyze data that flows through the contact center, and provide deep insight into the customers' journey and the contact center workforce.

In contrast to other vendors, this integration provides the WFO data directly into the Flex user interface. With this, your users do not have to manage two different applications.

For example:

- Your agents can find data related to their breaks, training and activities happening during their work day directly on their interface.

- Supervisors have the ability to monitor all agents' adherence and real-time activities within leaving their Flex interface.

Your developers have the ability to modify the way the application is presented to the user, integrate tools to protect existing investment and make changes as your business grows without depending on the vendor.

PCI compliance

With Flex, you can securely accept payment information over phone calls using PCI compliant features provided by Twilio's voice infrastructure. Twilio has direct integrations with payment processors like Stripe and Chase Bank that support different payment methods like credit cards and bank transfers, ensuring you never have to worry about payment data being compromised.

There are three ways to build PCI compliant call flows with Flex:

- Use Twilio <Pay> to accept payments with a completely self-service IVR that securely collects credit card information from the caller before passing it to the payment processor you have chosen.

- For complex transactions or customers that need more support, you can use Agent Assisted <Pay>, to allow your agents to ask customers for their payment details in a step-by-step manner while remaining on the phone with them. Agents can only see if the customer provided valid details, and they never get access to the actual payment information.

- If your infrastructure is PCI compliant and you want to use an existing payment integration, you can enable PCI Mode for all your voice traffic and use <Gather> to capture payment data. This data is not logged within Twilio systems and transmitted directly to you, which allows you to send this data to your payment processor.

- If you record calls, you can enable PCI Mode, Voice Recording PCI Compliance and Voice Recording Encryption for your Flex instance to ensure calls containing sensitive payment information are recorded and stored in a compliant manner.

User interface (agent, supervisor and IT admin)

The Twilio Flex user interface (UI) is built on HTML, Javascript, and React to enable a component-based programmable UI. The interface supports WebRTC and uses G.711 or OPUS as the voice codec. Its configuration allows control over the way apps load, as well as the behavior of individual Flex components. Its architecture allows for a number of modifications including but not limited to:

- Program the UI using plugin builder or a sample project

- Manipulate, add, replace or remove default properties for Flex components

- Customize themes and styles

- Control localization and templates

- Listen, intercept, and manipulate UI events

- Create desktop notifications using the Notifications Framework

- Alter behavior/appearance for native channels or define custom ones with the task channel API

- Mix in task or theme context to your custom components

Flex enables businesses to create localized versions of the Flex UI based on their needs. Full support for localization is coming for Flex, but language settings can be controlled programmatically.

Find more details on the interface for each of your users:

Agent Interface	Twilio Flex UI allows customers to design and deploy a unique agent interface integrated with their business applications to increase agents' productivity. Your agents can use the Flex agent interface, or **Flex features can be integrated into any CRM system, whether it is on-premise, cloud-based, or custom-built.** The UI gets information from the routing engine and the self-service tools to gather additional context about the customer, the interaction history stored in your data source and dynamic changes on the skills or task prioritization. The Flex UI loads and renders content dynamically, switching context, based on the active task. Any UI event can programmatically pull or push data into or out of one or many UI components. This allows customers to create personalized experiences that are contextual and adaptive to the current interaction with the goal to maximize agents' efficiency.
Supervisor Interface	By using Twilio <Conference> hub, supervisors have the ability to monitor, whisper and barge into interactions to monitor the agents' performance. Through the Flex Teams view, supervisors get basic management and monitoring by filtering the view of all the agents. • Listen in real-time agent calls. • View all chat conversations in real-time. • Review depth of individual agents' conversations. • Check other details specific to active conversations. • Update agent skill levels. Supervisors also have access to the Flex Queue Stats view, which shows queue depths, task and agent statistics. Real-time queues view is available for the entire contact center and for individual queues. Besides, the view updates every 1 to 3 seconds.
IT Interface	The Console provides a visual view to manage, debug, and operate all Twilio products, tools to build and debug your apps, and a dashboard with contextual information about the products you have recently used. Through the Twilio Console, your IT team and developers get access to these and more tasks: • Create your Flex project • Manage and invite users to the project • Configure your design, manage communication, add twilio products to a project • Integrate applications or add plug-ins • Buy a phone number or apply for a short code • Review configuration settings for your numbers • Check your account usage and billing • Enable beta functionality You may create individual projects for each Flex instance to provide segregation of configuration, management, and contact center operations. With these multi-region projects, each region is built and configured independently.

Dashboard/reports/metrics

Twilio Flex Insights provides sight into conversations between agents and customers, no matter the channel or the direction — inbound or outbound — with the ability to drill down from top-level KPIs to individual conversations. Define custom metrics and control the definition of existing metrics.

There are multiple reports and dashboards offered out-of-the-box and organizations can build other reports leveraging APIs, or simply by using the drag-and-drop tool to quickly create new reports. Historical data is retained by default for 24 months, and we also support the alternative to store data for extended periods. However, you can also use programmability to define custom metrics and control the definition of existing ones. For example, if you compute service level differently from how we do, you can change that definition and it will instantly reflect within every built-in and custom report.

Through Flex Insights, supervisors can listen to agent conversations, check the transcriptions of digital interactions, evaluate agents performance, provide feedback and assess conversations without leaving their interface.

Flex Insights provides the following capabilities:

- **Custom metric and KPI definition.** Define your own custom metrics and KPIs. Customize any existing ones to fit your business.

- **Custom report builder.** Quickly create custom reports and dashboards through an easy-to-use drag and drop report builder.

- **Email-based alerts.** Define custom alerting thresholds on any metric and receive emails when that threshold is exceeded.

- **Pre-built reports and dashboards.** Analyze the performance of your contact center through powerful built-in reports.

- **Export report and dashboard.** Export dashboards and reports as an Excel File, CSV, PNG image or PDF.

- **Report export API.** Load your analyzed interaction data into your data warehouse through our REST API.

- **Reporting on custom interaction data.** Add context to, improve the richness of, and slice & dice your data by using custom attributes attached to an interaction.

- **Scheduled dashboard and report emails.** Schedule emails of your metrics on a defined interval.

Organizations can add data during the task handling and use their BI tools of choice to analyze and report on the activity handled into the contact center. Users can add custom tasks and worker attributes to collect the right data for their reporting needs. You can set up to five custom conversation measures (numeric values) and up to seven custom conversation attributes (text values) to hold custom reporting data.

Connectivity

Twilio Super Network connectivity uses redundant carrier interconnections for call ingress and egress. It supports redundancy both within-region and across regions. It takes a proactive routing approach by optimizing routes and spotting potential carrier outages before they impact your customers. Twilio has developed unique internal tools that monitor hundreds of millions of data points per day to be able to fine tune routing optimizations to maximize quality. Twilio provides on-demand high-quality carrier-grade SIP trunking resting on a foundation of partnerships with tier-one providers worldwide. Twilio measures voice quality on every route in real-time to choose how to route traffic and deliver the highest quality to customers.

Twilio provides local phone numbers in six regions and 50+ countries. It has the ability to terminate calls in over 200 countries. In addition, Twilio provides options for direct customer connectivity using SIP and the ability to bring your own carrier. More details on [Twilio Voice coverage](#).

For PSTN Connectivity for your contact center, we have four options:

- **Flex With Super Network.** By using virtual numbers (local, national, mobile, and toll-free) in 100+ countries with a developer-friendly API.

- **Elastic SIP Trunking for Contact Centers.** Bridges IP-based infrastructure to the PSTN for making and receiving calls to the rest of the world via any broadband internet connection.

- **SIP Interface.** By using a private connection you can connect your SIP infrastructure (either an on-premise or UCaaS system) to Twilio.

- **Bring Your Own Carrier (BYOC) for Flex.** Customers can use their existing PSTN voice carrier partner(s), keep their phone numbers with that carrier, and add Twilio programmable voice capabilities to those calls and numbers.

Global platform services

Twilio's platform utilizes a microservice architecture model and is designed for elastic scalability. The overall platform takes into account a one year forecast for planned capacity. In 2019, Twilio supported over 795 billion interactions globally across email, chat, voice, and SMS while maintaining a 99.999% API uptime.

Twilio has a network of 29 data centers around the world to power global communications.

Our media edges and conference mixers are deployed in eight regions with additional expansion in progress:

- US-East
- US-West
- Singapore
- Australia

- Japan
- Frankfurt
- Brazil
- Ireland

LONDON, UK

DUBLIN, IRELAND

FRANKFURT, GERMANY

OREGON, USA

SAN JOSE, CA USA   TNX   ASHBURN, VA USA

TOKYO, JAPAN

SINGAPORE   TNX

RIO DE JANEIRO, BRAZIL

SYDNEY, AUSTRALIA

LEGEND

SUPERNETWORK
MEDIA EDGES

TNX   SUPERNETWORK
MEDIA EDGES + INTERCONNECTS

US EAST 1 (3 AVAILABILITY ZONES)
CUSTOMER ACCOUNT HOME

- Customer Data in US-EAST-1 (3 of 5 Availability Zones)
- Media Edge (8 Regions/24 Data Centers)

Voice services are supported based on the datacenter locations outlined in the following diagram. Thus, voice media can be delivered in-region to optimize call quality and network efficiency.

Twilio's infrastructure is distributed across multiple fault-independent regions to ensure global resilience, even if one location goes down, during natural disasters or system failures.

Twilio leverages an incident management tool that automatically detects degraded service and provides alerting and escalation as

needed. Our orchestration tooling has the ability to regenerate hosts, building them from the latest backup.

Our business continuity program is aligned to the international standard ISO 22301 Business Continuity Management System. It details specific strategies for activation and escalation, recovery of key resources and resumption of critical business functions. In addition, Twilio performs regular backups of accounts information, call records, call recordings, and other critical data. Besides, all backups are encrypted at rest using AES-256 encryption.

Resources

- [Twilio Flex](#)

- [Twilio Flex UI](#)

- [Twilio Flex plugins](#)

- [Twilio Flex insights](#)

- [Flex routing](#)

- [Twilio self-service/IVR](#)

- [Twilio's platform business continuity](#)

twilio

Twilio powers the future of business communications, enabling phones, VoIP, and messaging to be embedded into web, desktop, and mobile software. We take care of the messy telecom hardware and expose a globally available cloud API that developers can interact with to build intelligent and complex communications systems.