



A Hyper Scalable and Secure **Media Streaming Gateway** for VoiceAI Applications

BotStream is a bidirectional voice streamer that interfaces telephony services with conversational voice AI applications. It includes an API Dialer, Call recording, Conference module, Trunk manager, QOS monitor and CPA. It supports both Inbound and outbound voice traffic and can integrate with PSTN or any PBX over E1 or SIP protocol while communicating with the conversational AI application over WebSockets.

The entire BotStream setup resides in the Kubernetes cluster, and is capable of auto scaling according to the load.

HIGHLIGHTS

- The Telephony stack for Voice AI application vendors
- Easy Integration with VoiceBots
- Deploy anywhere
- A Scalable & Secure System
- Low Resource Footprint
- Reduce Overall Costs
- Real time monitoring

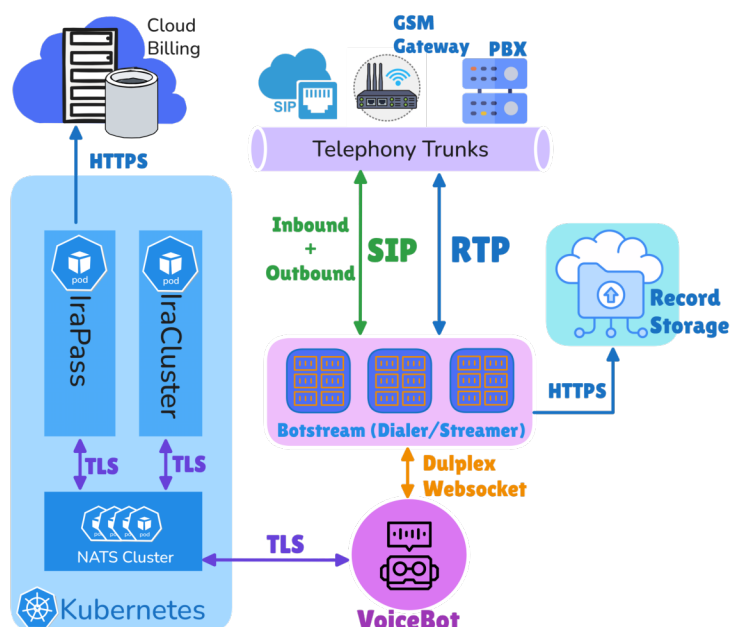
USE CASES

- Debt Collection
- Recruitment
- Telemarketing
- Payment Reminders
- Appointment scheduling
- Survey and feedback collection

■ BotStream Telephony Stack

BotStream comprises one or more telephony switches, front ended by a SIP proxy for load balancing. This allows BotStream to scale horizontally as the load increases.

The high speed communication between the telephony switches and the VoiceAI engines is enabled via NATS platform. The BotStream is built on the popular Freeswitch telephony platform.



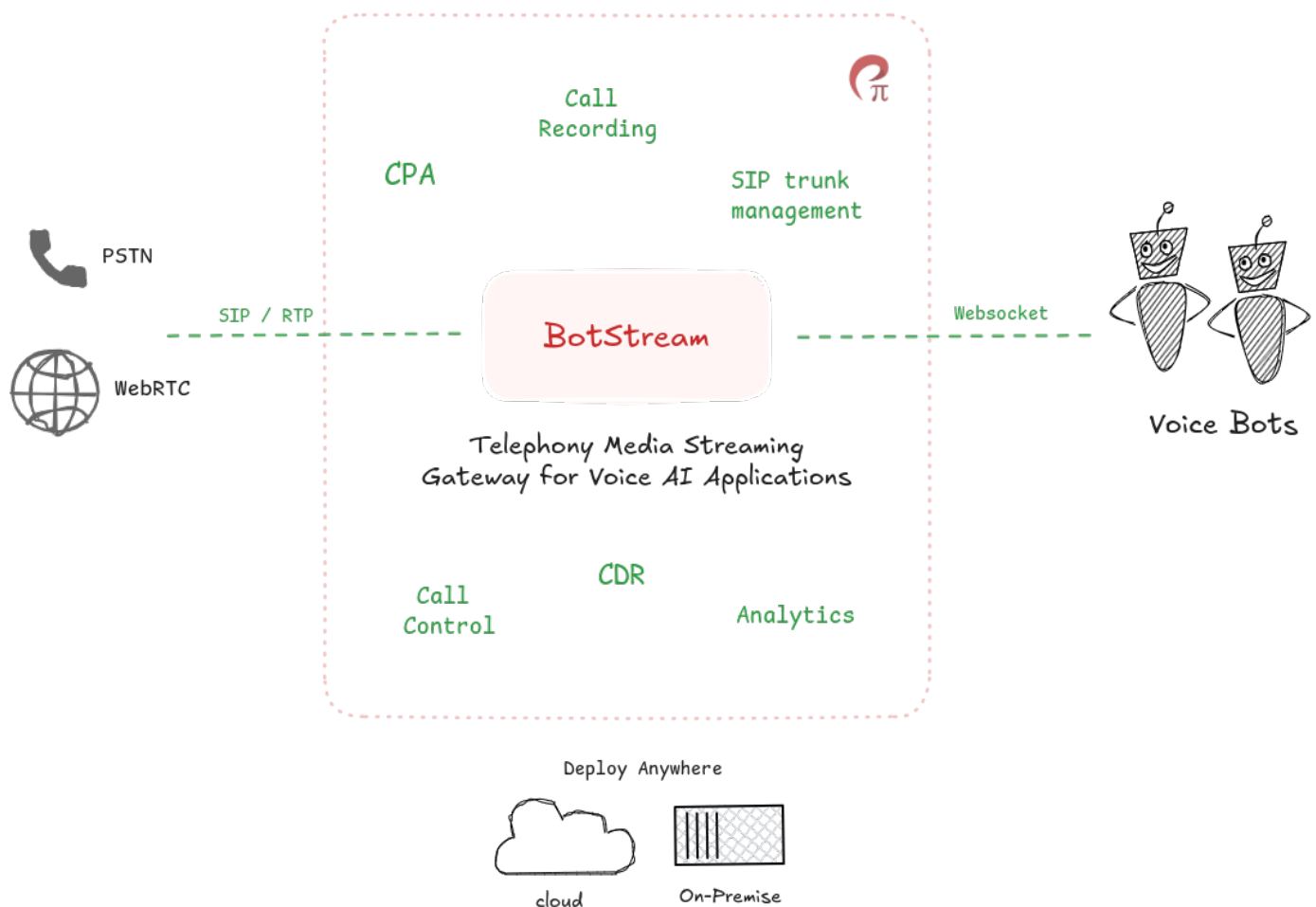
■ Easy Integration with VoiceBots

BotStream APIs lets you add complete VOIP functionality to your AI bots without the need of any specialised telephony knowledge. A set of well defined APIs lets you add Inbound/ Outbound calling capabilities to the application enabling seamless communication with your customers on any platform.

The websocket based interface is a low-latency, bidirectional communication protocol that lets

bot endpoints communicate with telephony servers using http request/response model.

With media streams being available to VoiceAI engines, the customer experience can be enriched in real-time via call barge-in, sentiment analysis, transcription, analytics, recording services provided by third party services or by VoiceAI engines itself.



■ Voice Activity Detection(VAD)

In addition to real-time streaming, BotStream also supports streaming based on VAD, wherein the customer audio will be buffered until the customer pauses and then sent to the bot at one shot.

■ Deploy Anywhere

Supports on premise deployment, or cloud deployment based on the customer needs.

■ Business Hour Restrictions

Some campaigns require restricting customer contact to business hours only. BotStream offers this feature at the campaign level, allowing you to set specific open hours for each campaign.

■ A Scalable & Secure System

The platform is designed for 99.999% availability and can automatically scale to meet the variable traffic load in real time. This ability to auto-scale as and when required is a powerful feature that can help you to handle large volumes of calls within as and when needed.

To comply with Industry Security Standards, BotStream APIs do not require any called party or calling parties information apart from phone number to be shared with it. It supports end-to-end encryption using TLS and secure RTP for media.

■ Real time monitoring

Comes bundled with a real time dashboard to monitor the number of calls that are being dialled, answered, streamed etc. Also highlights errors like the number of streaming requests that failed in the last 30 seconds for each campaign with the break-down of reason for failure.

The dashboard also highlights bottlenecks in bot performance for each campaign by considering a silence of over 4 seconds by bot as a bot error and displaying the number of bot errors for each campaign in the last 30 seconds.

■ Call Progress Analysis

IraCPA is an optional software that can be enabled as part of BotStream. This feature helps to automatically detect the answering machines and quickly route calls to agents, or drop the calls based on whether the call has reached a human voice or fax machine. This helps to minimize agent idle time by filtering out non-productive calls.

The Call Progress Analysis (CPA) module from Epicode uses complex algorithms based on the

tone of the spoken voice, the speed of the spoken words, post greeting silence etc to detect if the remote party is a human or a machine. This allows it to achieve industry leading accuracy at a very short analysis duration of 1.75 seconds, and also providing sufficient time of 0.25 seconds for API users to transfer/bridge the call with an agent thereby being fully TCPA compliant.

■ Call Recording

For quality assurance and training purposes, the calls can be recorded and pushed to a secure storage for processing further. Recordings are typically saved in standard audio formats such as MP3, WAV. These formats ensure compatibility across most platforms and software tools.

Call recordings can be pushed to secure cloud environments like Amazon S3, Google Cloud Storage, or Microsoft Azure for enabling teams to retrieve recordings from anywhere or to network attached storage devices for on-premise deployments.

■ Trunk Manager

The trunk manager keeps track of the capacity and health of each trunk. It ensures that if a trunk is busy or unavailable (due to network issues, maintenance, or system failures), it reroutes calls to other available trunks, minimizing downtime and improving call success rates. Other features include:

Call Routing: This determines how outbound calls are routed. It assigns the most appropriate trunk to each call based on the factors like availability, CPS(calls per second).

Pool Management: When there are multiple sip trunks available for dialing, the trunk manager helps to balance the load across multiple trunks to avoid overloading any single trunk.

Call Failure and Redundancy: If one trunk becomes unavailable, the trunk manager can automatically failover to dial through the other available trunks providing redundancy and reduce the disruptions due to network issues.

Use Cases



Debt Collection – Outbound Calling Process

Automatically dial customers and let the VoiceAI bots to deliver pre-recorded or dynamically generated messages reminding them of the overdue payment, and facilitate payment collection.



Recruitment

Automatically dial candidates and let Voice AI bots to conduct initial pre-screening calls or interviews with candidates, asking them questions related to their experience, skills, qualifications, and motivations.



Telemarketing

Initiate calls to potential customers (leads) and let the bots engage with them in a natural conversation to gather information, qualify the lead, and pass it on to the sales team if necessary.



Appointment Scheduling and Reminders

Dial prospects and let the bots set up appointments for sales calls, demos, or meetings. Additionally, you can also dial to follow up with reminders and confirmations to reduce no-shows or missed meetings.



Survey and Feedback Collection

Dial prospects and help the bots collect feedback right after they have made a purchase or completed a service.



Insurance Premium Collection

Dial customers and let the insurers bots to manage their payment collection process that includes premium payment reminders, follow-up on missed payments, FAQs etc.

■ Conclusion

Botstream is a field tested, high availability, hyper scalable Telephony stack and is specifically designed to address the unique requirements of Voice AI applications.

The primary value proposition of BotStream can be summarised in three key points:

- Improve Competitive Advantage of Voice AI partners through resource optimization (Auto Scaling) and minimising support & operations costs.
- Improve data security by restricting access to multiple vendors.
- Increase valuation of Voice AI solution partners by enabling them to provide a complete solution to their end customers and stop funding their potential competitors.

■ About Us

Epicode Private Limited, a middleware product company was established in the year 2020. Epicode's business model is tailored on the below mentioned attributes:

- Develop API based backend software products with a primary focus on system engineering.
- Domain focus: Telephony and Process Automation.
- The "Go to Market Strategy" would be "OEM partnerships" with a B2B approach, selling only to systems integrators, technology partners, and business application developers.
- No end-customer engagement.
- The API-based middleware products will not have any web based front end.
- Adopt proven and field-tested best-of-breed open source platforms as part of our product stack.

As a consciously chosen design strategy, our OEM products are designed based on the partner's business requirements or use cases. The Epicode solution architects make sure that the products are optimised for specific deployment environments as prescribed by our business application partners, be it on-premise or pure cloud environments like AWS, Google or Azure cloud.

Epicode doesn't sell to end customers. Our products are API-based middleware modules, which can be used by Technology Solutions companies as part of their solution. Epicode adheres to a strict "no-compete" business policy.



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