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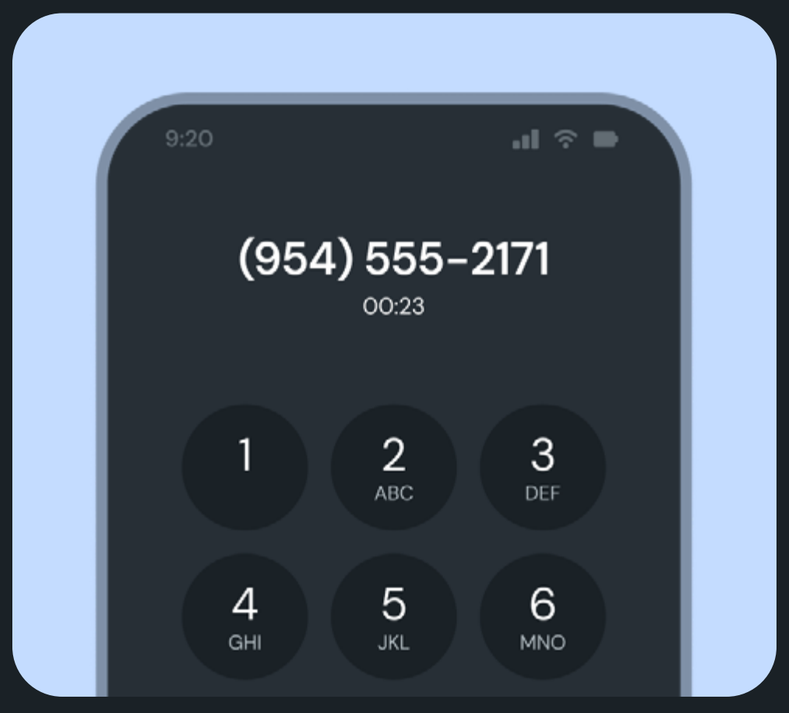
E-BOOK

A technical guide to modernizing enterprise voice infrastructure



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PART I

What's driving the shift: Why voice infrastructure needs to evolve

Voice experts have been saying it loud and clear: 2025 has been the year of a massive shift in voice communications – and the next years will be all about evolving existing infrastructure. Why is voice at a turning point right now?

As with many technology shifts we're seeing, AI is the real driver behind this. For voice, AI improvements have not only accelerated the market shift towards modernization, but also exposed the weaknesses in legacy infrastructure.

It's not like interactive voice response (IVR) menus, long wait times, or awkward lags are anything new. But the differences between outdated voice systems and smoothly operating ones – often supported by AI – now stand out more than ever, and customers aren't accepting it anymore.

Inefficient communication with businesses is what 2,800 consumers named as their biggest frustration in Sinch's 2025 *The state of customer communications* report.

For 81%, having to repeat information is a constant pain point and 59% don't appreciate disjointed communication. These issues aren't unique to voice, but they tend to show up more often.

So, while "good enough" used to be acceptable, customers aren't tolerating it anymore. That also means that bad experiences on the phone not only leave customers more upset, they're also eroding trust faster.

Businesses aren't oblivious to this. In fact, according to a recent survey, 79% of companies say they aren't satisfied with their current voice features. They've known for a while that their voice setup needed a refresh. But the evolution of voice AI, **the gap between where voice is and where it *should* be is becoming impossible to ignore**.

At the same time, modernizing voice communications seems easier said than done. Voice technology has been around for over 70 years, which means that most enterprises are operating a complex patchwork of analog and digital solutions. This kind of setup can make it tough to modernize as switching platforms or updating your architecture often comes with a lot of headaches, from hidden costs to technical roadblocks.

For many enterprises, the blocker in upgrading their voice systems isn't the "if" but the "how". That's also because "modernizing voice" can mean very different things depending on the individual setup and goals. You could be looking at simply adding more flexibility to your session initiation protocol (SIP) trunks, at integrating context-aware conversational AI agents, or even at moving your entire architecture into the cloud.

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> "Voice is going to form a great alliance with AI. Together, voice and AI speed up resolution and keep customers happy, which is a prime value driver."
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> 
>
> **Julia Fraser** • Executive Vice President Americas at Sinch

That's why there's no one-size-fits-all approach. A successful voice upgrade is all about finding the path that meets your needs – and this guide is here to help you do just that.

We'll introduce the 4D framework, a technical modernization roadmap that's built on four pillars – Define, Diagnose, Design, and Deploy – to help you evaluate where you're at, where you want to go, and how to get there. You'll also find practical tools, like a downloadable vendor scorecard or a reference chart for voice architecture options. Plus, we'll share insights on key stakeholders to involve in the process, how to address their concerns, and how to get everyone on board.

By the end, you'll have a clear game plan to modernize voice your way.

PART II

The path to modernization: A technical framework for upgrading enterprise voice

Many ways lead to a modern voice platform, and they don't all require a complete system overhaul. The best modernization path for your enterprise depends on your primary drivers for modernization, top priorities, voice infrastructure needs, and current setup.

Not sure where to start? The **4D framework** (Define, Diagnose, Design, Deploy) can help you evaluate where to get started and how to phase.

D1– Diagnose

Understand what's broken

D2 – Define

Pick the right strategy

D3 – Design

Architect the solution

D4 – Deploy

Execute the rollout

Following this framework will help you come up with a comprehensive and actionable modernization roadmap.

Each stage involves several key questions you need to ask, main actions to tackle, and a targeted output that'll take you to the next step. The different parts build on each other to form a modernization roadmap tailored to your situation and business.

In this guide, we'll walk you through each phase in detail and give you helpful tips and assets to enable you to come up with a personalized modernization plan for your voice infrastructure.

SIP, PBX, SBC – the voice industry uses a lot of acronyms. Not quite sure what they all mean? No worries, we get it. That's why we've put together a useful glossary for you at the end of this guide. Or, if questions come up as you're reading, jump straight from the terms to the definition.

DIAGNOSE

D1: Understand where you are, what's broken, and what matters most

Diagnosing your current voice infrastructure is the first step in understanding what and how to modernize it.

In this phase, you should get an overview of existing systems, understand where they're falling short, which teams you need to involve, and come up with a clear plan of what needs to change.

While other phases are more focused on actions and outputs, this initial part is centered around getting clear on the essentials by asking some key questions.

Key questions during the Diagnose phase:

❓ Assess your current infrastructure and its shortcomings.

1. What is our current voice infrastructure?

As a first step, identify what your current voice setup looks like. Here are some common scenarios you might be looking at:

1. You're building an application or platform and want to implement voice features.
2. Voice infrastructure is an essential part of your contact center solution, but you're looking for an upgrade (better voice quality, modern features, automations, integrations).
3. You're using a cloud platform like Genesys or Microsoft Teams and are looking for a carrier to support your voice services.
4. You have an on-premises private branch exchange (PBX) and other legacy systems that you want to connect to your digital infrastructure.
5. You have legacy systems that you want to fully move into the cloud.
6. You have a patchwork of analog and internet-based systems, global infrastructure, and multiple communication channels (voice, SMS, email) and are looking for a unified, global CPaaS platform.
7. Your company is moving to a hybrid work model and needs a flexible voice setup that supports employees wherever they are.
8. You're expanding – whether through new locations, markets, or acquisitions – and need a scalable, centralized voice solution that grows with your business.

Once you've taken stock of your current setup, identify where it's falling short. That'll also give you a pretty good idea of what's really driving the initiative.

2. Where's the current setup failing, and what's driving the need for innovation?

Identifying the shortcomings of your voice infrastructure is essential in choosing a modernization path. While each situation is different and unique, there are some common problems enterprises face with their voice channel.

- **Poor call quality**: Unreliable audio and dropped calls damage trust and stall business outcomes.
- **Disconnected systems**: Voice is often siloed from your tech stack, causing manual work and customer friction.
- **Unpredictable costs**: Aging systems lead to surprise expenses, emergency fixes, and licensing fees.
- **No room to grow**: Scaling voice means delays and complexity when your system can't keep up.
- **Limited flexibility that slows you down**: Fixed capacity and slow provisioning lead to overpaying or underdelivering.
- **Inefficient operations and lack of automation**: Manual work and rigid systems drain productivity and increase errors.
- **Growing security risk**: Legacy systems lack encryption and updates, exposing you to threats and compliance issues.
- **Need to build voice infrastructure with limited resources**: Adding voice to apps or platforms can be overwhelming without the right tools or expertise.

If you're looking at upgrading your voice systems, you're probably facing one or more of these issues. However, you might not want to or be able to address them all at the same time. In that case, it's helpful to **identify the main drivers for modernization**. They'll indicate where your main pain points are – and what you should fix first.

Here's an overview of some catalysts that typically drive voice modernization in enterprises.

Main driver	Starting point
Reliability and quality issue	Identify what's causing it (legacy infrastructure, patchwork system, voice provider) and assess whether it's a hardware, software, bandwidth or switch issue to start looking for better solutions.
CX issues	Pinpoint main issues (zero-outs, outdated interactive voice menus, outages), make a priority list, and look for API-based upgrades for an easy, fast, and modern fix.
Security concerns	Detect where your system is at risk (E911 compliance, HIPAA, GDPR, etc.) and prioritize providers and solutions that guarantee security and compliance by design.
Cost control	Analyze where you're overpaying and why. Often, it's a lack of a flexible and scalable infrastructure that can be addressed by introducing flexible services like elastic SIP trunks.
Inefficiency/lack of agility	Make out what your voice system needs to become more effective and agile (new capabilities, upgraded features, automation) and start looking for functionalities that you can integrate easily without an entire system overhaul.

3. Which teams are impacted?

Once you've identified where your voice infrastructure is lacking and what your main innovation drivers are, it's time to think about the teams your modernization will impact.

This will help you identify focus areas, key stakeholders, and blockers early on – and come up with a deployment plan that'll reduce friction points.

Typically, these teams are affected by voice system changes:

- Customer support
- IT
- Customer experience (CX)
- Operations
- Data
- Product
- Legal
- Finance

Actions to take during the Diagnose phase:

Take stock and engage with stakeholders

As you close out the Diagnose phase of your voice modernization roadmap, the focus shifts from exploration to structured evaluation. This is where you begin to translate what needs to change into how it should happen.

Actions to take in this phase include:

- **Completing a detailed inventory** of all existing voice infrastructure and its dependencies. This helps establish a baseline and reveals any hidden complexity across systems.
- **Engaging with key stakeholders** from IT, customer experience, information security, and procurement to gather insight into operational needs, risk factors, and future goals. These conversations often surface recurring pain points – whether it's service uptime, cost management, or blockers that are slowing innovation.
- **Assessing your infrastructure** across four key dimensions: reliability, flexibility, integration, and supportability. Scoring your environment in these areas helps quantify risk and readiness in a way that's easy to communicate across teams.

Targeted output for the Diagnose phase:

Create a list of priorities

The output to achieve at this stage is twofold. First, a **modernization readiness snapshot** that captures the current-state realities of your voice infrastructure; and second, a **prioritized list of technical and business pain points** that'll inform the strategy phase ahead.

With these pieces in place, you'll be ready to move into the D2 (Define) phase.

DEFINE

D2: Pick the right strategy based on business goals, technical context, and constraints

With a clear picture of your current-state infrastructure and its pain points, the next step is to chart a path forward. The Define phase is where strategy takes shape by translating diagnostics into an actionable modernization plan tailored to your business.

This is not a one-size-fits-all exercise. The right voice strategy must reflect your organization's specific goals, technical realities, and operational constraints. Whether you're focused on scaling customer support, improving reliability, reducing costs, or enabling embedded voice in digital products, this phase ensures that your next move is deliberate, not reactive.

Key questions during the Define phase:

❷ What do we want, and what's required?

Establish the best path forward by tackling these questions in the Define stage.

1. Are we trying to reduce cost, increase agility, or both?

Start by clarifying the primary drivers behind your modernization effort. If reducing cost is the priority, look for opportunities to consolidate vendors, shift to more cost-effective solutions like SIP trunks, or eliminate underused systems.

If agility is the focus, consider what's limiting your ability to scale, adapt, or innovate today. In many cases, the answer is both – and the right strategy will need to balance efficiency with flexibility.

CASE STUDY

LiveVox

Industry: Software

Goal: Upgrade voice callback management.

LiveVox, a contact center platform, wanted to streamline how it managed voice callbacks from SMS, but its existing setup created complexity and slowdowns. It adopted Sinch's Elastic SIP Trunking to unify SMS and voice operations under one control plane, enabling both channels to live in a single dashboard.

The results:

- Reduced operational friction
- Lowered troubleshooting overhead
- Improved the customer experience through seamless callbacks
- Scaled to support over 50 projects and hundreds of phone numbers

LIVEVOX

"Sinch has truly empowered our platform by making it easy to manage both SMS and voice. Our clients appreciate the flexibility and seamless callback features that enhance the customer journey."

Oscar Orozco • Senior Voice Engineer at LiveVox

2. How much of our voice infrastructure do we want – or need – to outsource?

Modern voice solutions offer a spectrum of control, from fully managed services to DIY infrastructure. Decide how much ownership your team wants to retain. Outsourcing can reduce overhead and complexity, but it also means placing trust in external partners. Consider your internal capabilities, appetite for risk, and how involved you want to be in day-to-day operations and optimization.

3. Do we need APIs for integration or customization?

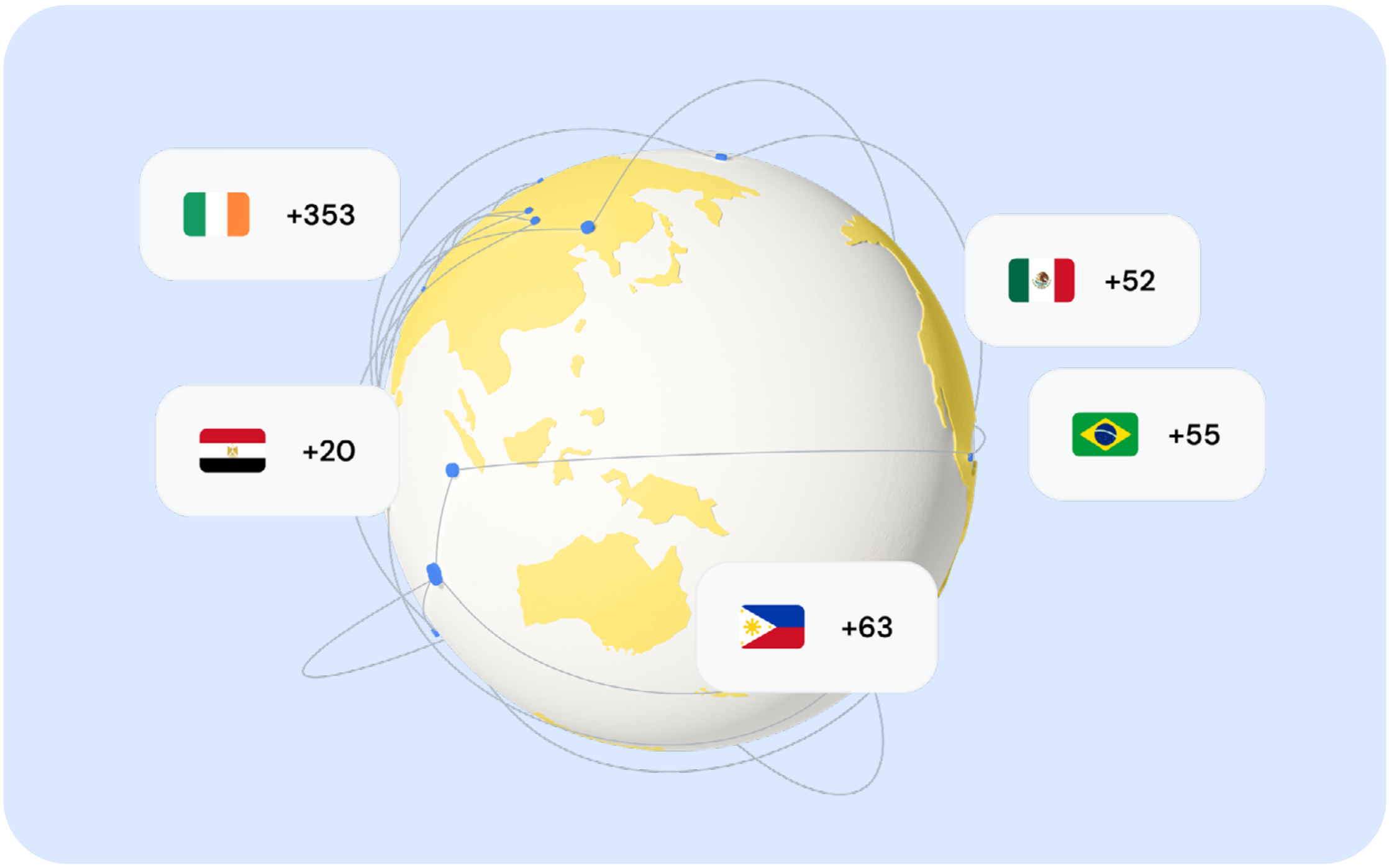
If voice is part of a broader digital experience like an app, customer portal, or internal workflow, API access is essential. This allows you to embed calling, route calls dynamically, or trigger events based on customer behavior. Assess your current and future integration needs, especially if developer teams are involved in shaping the customer experience.

4. What scale do we need (users, regions, call volume)?

Scalability isn't just about adding users. It's about maintaining performance, visibility, and control as you grow. Estimate both current and projected demand, including geographic reach, concurrent call volume, and user roles. Your strategy should support today's needs while leaving room to scale efficiently in the future.

5. What compliance frameworks must we support?

Voice infrastructure must meet your industry's compliance requirements – whether that's GDPR, HIPAA, PCI DSS, or other frameworks like E911 or STIR/SHAKEN. Identify what regulations apply to your business, where data is stored and routed, and whether you need built-in tools for audits, consent, or encryption. A strategy that overlooks compliance can introduce costly risks down the line.



Answering these foundational questions helps ground your strategy in the realities of your business, clarifying what capabilities you'll need moving forward. With that, you're ready to move from why to how, by exploring the voice modernization options available to you.

Actions to take during the Define phase:

Assess your options

Now it's time to map your path forward. In this stage of the Define phase, you'll evaluate the range of architectural options based on your goals, resources, and appetite for change. From targeted fixes to full-scale re-platforming, modernization isn't a binary choice – it's a spectrum. The right approach depends on how much transformation your business needs, and how much it's ready to take on.

To help you identify your voice architecture options, we've broken down the modernization spectrum from the least change to a complete re-platforming.

Not that the "best" option(s) for you depends on your current setup, use case, and goals.

Option	Change Level	Time-to-value	Control	Ops complexity	Best for
SIP + SBC on-prem	Low	Fast	High	Low-Medium	Cost & reliability quick wins
Hybrid BYOC	Low-Medium	Fast	High	Medium	Cloud features without porting
Cloud control + edges	Medium-High	Medium	Medium-High	Medium-High	Branch survivability, media locality
Programmable voice API	Low-Medium	Fast-Medium	Very High	Low-Medium	Custom logic & rapid iteration, app integration
Full cloud	High	Medium-Fast	Low-Medium	Medium-High	Simplicity, standardization of global / multichannel operations

Assess the best voice architecture option for your situation, goal, and desired change level.

OPTION 1

Refresh on-prem with SIP and SBC

This is the lowest level of change and typically delivers the fastest time to value. By replacing legacy time-division multiplexing/primary rate interface (TDM/PRI) circuits with carrier-grade SIP trunks and deploying or upgrading enterprise session border controllers (SBCs), organizations can reduce costs and improve reliability without overhauling their voice environment.

Best for

Businesses looking for quick wins with minimal disruption, especially if analog systems or legacy dependencies are still in play.

Pros

You keep your existing PBX, automatic call distribution (ACD), and IVR systems in place, while layering on modern capabilities like call recording, analytics, or transcription through SIP or REST-based integrations.

Cons

This approach retains much of the legacy stack, which can limit long-term flexibility and require another transition down the road.

OPTION 2

Hybrid BYOC into UCaaS or CCaaS

The bring-your-own-carrier BYOC model allows you to keep your existing SIP trunks and SBCs while connecting them to a certified cloud provider for UCaaS or CCaaS.

Best for

Companies that want access to cloud-native features, such as AI-driven agent tools or omnichannel capabilities, without giving up control over carrier rates, number ownership, or compliance settings.

Pros

BYOC enables staged migration by site or department, reducing the risk of a full cutover.

Cons

You're operating in a dual environment – managing both cloud and on-prem – which increases operational complexity.

The BYOC approach is also great if you're already using a cloud platform like Genesys or Microsoft Teams and simply want to bring voice capabilities into it. Most platforms support BYOC and work with a host of certified voice providers you can choose from.

For more information, read our guide on the BYOC approach.

OPTION 3

Cloud call control with on-prem edges

This option moves call control into the cloud while keeping SBCs or gateways on-site. It allows enterprises to modernize call logic while still meeting strict operational or regulatory requirements.

Best for

Organizations with many branch offices, data residency needs, or media-locality constraints.

Pros

Media remains local, supporting Quality of Service (QoS) and survivability during wide area network outages, while signaling and management are handled centrally in the cloud.

Cons

With more moving parts including licenses, edge hardware, and secure routings, success depends on strong engineering and operational discipline, especially around Software-Defined Wide Area Network (SD-WAN), certificates, and ongoing edge management.

OPTION 4

Programmable voice API

For tech-forward organizations, programmable voice API platforms offer a high degree of flexibility and innovation. Using APIs, you can add AI agents, build and iterate on IVRs, call flows, recordings, analytics, and more, replacing or augmenting parts of traditional PBX or ACD logic with code.

Best for

Businesses that are looking to swiftly integrate modern voice features into their digital infrastructure while maintaining control.

Pros

Voice infrastructure becomes composable, customizable, and deeply integrated with internal systems like CRM, fraud detection, or logistics. This approach delivers high-feature velocity and global reach, while allowing you to test and scale quickly. It also enables granular control over user experience and business logic.

Cons

Your teams must manage development, DevOps, monitoring, and governance of voice flows, which may be a cultural or operational shift for some enterprises.

OPTION 5

Full cloud telephony (UCaaS/ CCaaS + provider trunks)

This is the highest level of transformation, best suited for organizations ready to fully re-platform. In this model, you port numbers to the cloud provider and retire on-prem systems – including private branch exchange, automatic call distributor, and most session border controllers – aside from minimal gateways for edge cases.

The result is a simplified operational footprint, standardized tools across regions, and centralized policy management.

Best for

Enterprises with large or global operations that are looking to integrate various digital communication systems and are handling multiple channels like email, voice, and messaging.

Pros

A full cloud environment accelerates access to advanced features like real-time AI transcription, agent assist, and automated quality assessment – either through a software as a service platform or a programmable voice API. This option offers maximum long-term simplicity and agility.

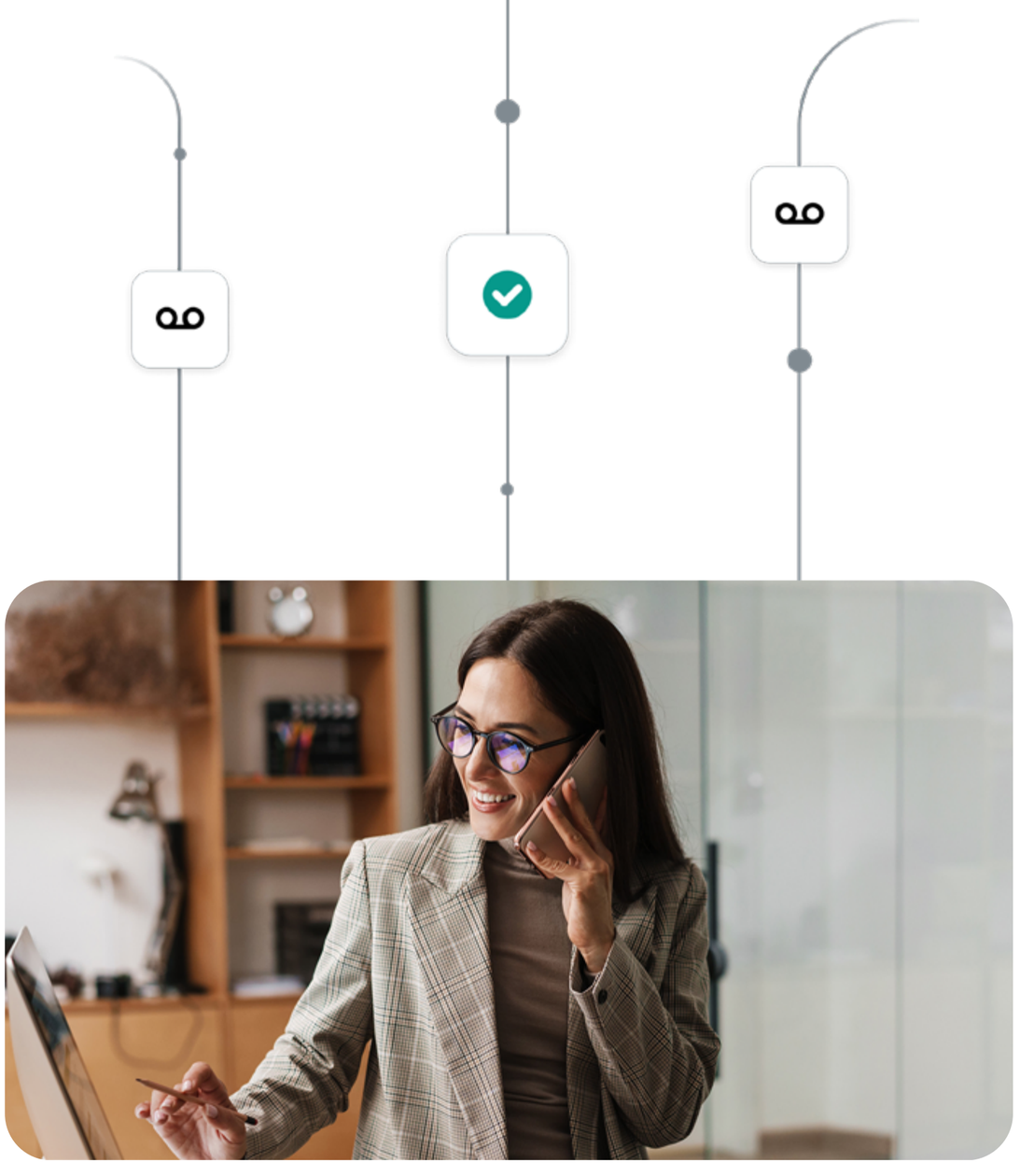
Cons

Moving your entire infrastructure into the cloud can come with short-term challenges, especially around number porting, routing control, and the cutover process. At the same time, it's a strategic leap that pays off when properly planned and supported – especially when working with an experienced digital cloud and voice provider

jivetel

"We've ported numbers for 16 years now and have never come across a team so easy to work with as Sinch. They make the impossible possible."

Ahron Richman • CEO at Jivetel



Bringing AI into your voice infrastructure

The easiest way to integrate AI is by starting with functionalities that enhance both efficiency and customer experience. For example, features like smart call routing, voice authentication, automated voice notifications, or real-time speech recognition reduce friction and help customers get what they need faster – all without repeating themselves.

AI also enables more personalized, natural voice interactions. By tapping into previous behavior or customer intent, businesses can automate responses and tailor conversations at scale. It's a faster, smarter way to connect, and it works across everything from support calls to appointment reminders.

If you want to go a step further, Conversational AI agents can handle routine inquiries on their own, freeing up live agents for more complex cases. They provide fast, human-like responses that keep conversations flowing naturally, even at high volumes. Voice AI is also becoming increasingly context-aware. Rather than assessing information as an isolated event, it interprets data based on past behavior, location, linguistic patterns, and other environmental factors providing an elevated user experience.

CASE STUDY

Discover how the Dutch medical technology company MINDD leverages conversational AI to create a safer and more efficient patient experience.

Read the full MINDD success story

Behind the scenes, AI can surface trends, flag issues, optimize call flows over time, and even prevent fraud.

Want to explore what's possible, and what makes sense for your business?

Let's talk

Now that you've explored the options for upgrading your voice infrastructure, it's time to evaluate which one fits best using key scoring factors based on what matters most to your business.

Targeted output for the Define phase:

Create a scorecard that can help you weigh the trade-offs based on what's most important to your business. Below are the key factors to consider as you assess your voice architecture options.

Economics

Consider the full financial picture, including the cost and complexity of number porting, your provider's billing model (per-minute, per-channel, or named seat), and any hidden charges like egress fees. Also, define your ROI horizon: Are you looking for immediate savings or long-term value?

Network and QoS

Evaluate whether your network supports real-time voice at scale. Key considerations include support for transport and traffic prioritization protocols like DSCP/EF, your codec plan (Opus, G.711, G.729, etc.), and performance thresholds such as jitter, packet loss, post-dial delay, and a target Mean Opinion Score of 4.0 or higher.

Contact center capabilities

If your modernization involves a contact center, ensure the platform supports advanced needs such as skills-based routing, workforce management and optimization, quality assurance, deep analytics, real-time transcription, AI-powered agent assist, and a roadmap for true omnichannel engagement.

Operational complexity

Look at how easy the solution is to manage. Depending on the technology and the modernization path you choose, this includes aspects like built-in observability tools like packet capture (PCAP) to call flow diagrams and trace IDs, alerting tied to meaningful service level objectives, and support for modern models such as blue-green deployments.

Level of control

Assess how much control you retain over the solution. This includes the ability to customize configurations and maintain agility in your voice strategy over time.

Interoperability

Consider how well the solution integrates with existing platforms and tools such as Microsoft Teams, Genesys, Webex, and core CRM or ERP systems. Interoperability also includes SBC certifications and the ability to accommodate analog or IoT devices.

Regulatory and safety compliance

Your solution must align with required regulations and safety standards, such as E911 in the U.S. You'll also want to assess capabilities around lawful intercept, call recording retention policies, and adherence to global data residency laws like GDPR.

E911 compliance isn't only a must for businesses in the U.S.; not meeting these emergency call standards also puts your business and employees at risk. Read our in-depth guide to get a full picture of what's required and how to upgrade your tech stack to be compliant.

Security

Security should be baked in, not bolted on. Evaluate encryption standards like Transport Layer Security/Secure RTP (TLS/SRTP), support for TLS authentication, SBC topology hiding, and fraud mitigation controls like toll fraud protection, robocall defense, and compliance with STIR/SHAKEN protocols.

To see how all these pieces fit together for your business, we've put together a handy scorecard you can download for free.

Voice modernization scorecard

Score each factor from 1 to 5 (1 = low priority/readiness, 5 = high)

How to use: Circle a score per factor (1 = low, 5 = high). Jot quick notes on the right.

Economics

- Porting costs/timelines
- Pricing model (seat/minute/channel)
- Carrier diversity/LCR
- TCO/ROI horizon

1 2 3 4 5

Notes:

Network & QoS

- SD-WAN & QoS (DSCP/EF)
- Codec plan (Opus/G.711/G.729)
- Target jitter/loss/MO
- PDD, early media paths

1 2 3 4 5

Notes:

Contact center needs

- Skills/WFM/WFO/QA
- Real-time transcription & agent assist
- Omnichannel roadmap
- Analytics & reporting

1 2 3 4 5

Notes:

Operations

- Observability & SIP ladders
- Alerting & SLOs
- Change mgmt (blue-green)
- Runbooks & resiliency drills

1 2 3 4 5

Notes:

Interoperability

- Teams/Zoom/Webex interop
- CRM/ERP integrations
- SIP header normalization
- Analog/IoT device plan

1 2 3 4 5

Notes:

Security

- TLS/SRTP & mutual TLS
- SBC topology hiding
- Fraud controls & rate limits
- STIR/SHAKEN & CNAM

1 2 3 4 5

Notes:

Regulatory & safety

- E911/NG911, Kari's Law, RAY BAUM's Act
- Data residency & retention
- Lawful intercept readiness
- Recording/consent policy

1 2 3 4 5

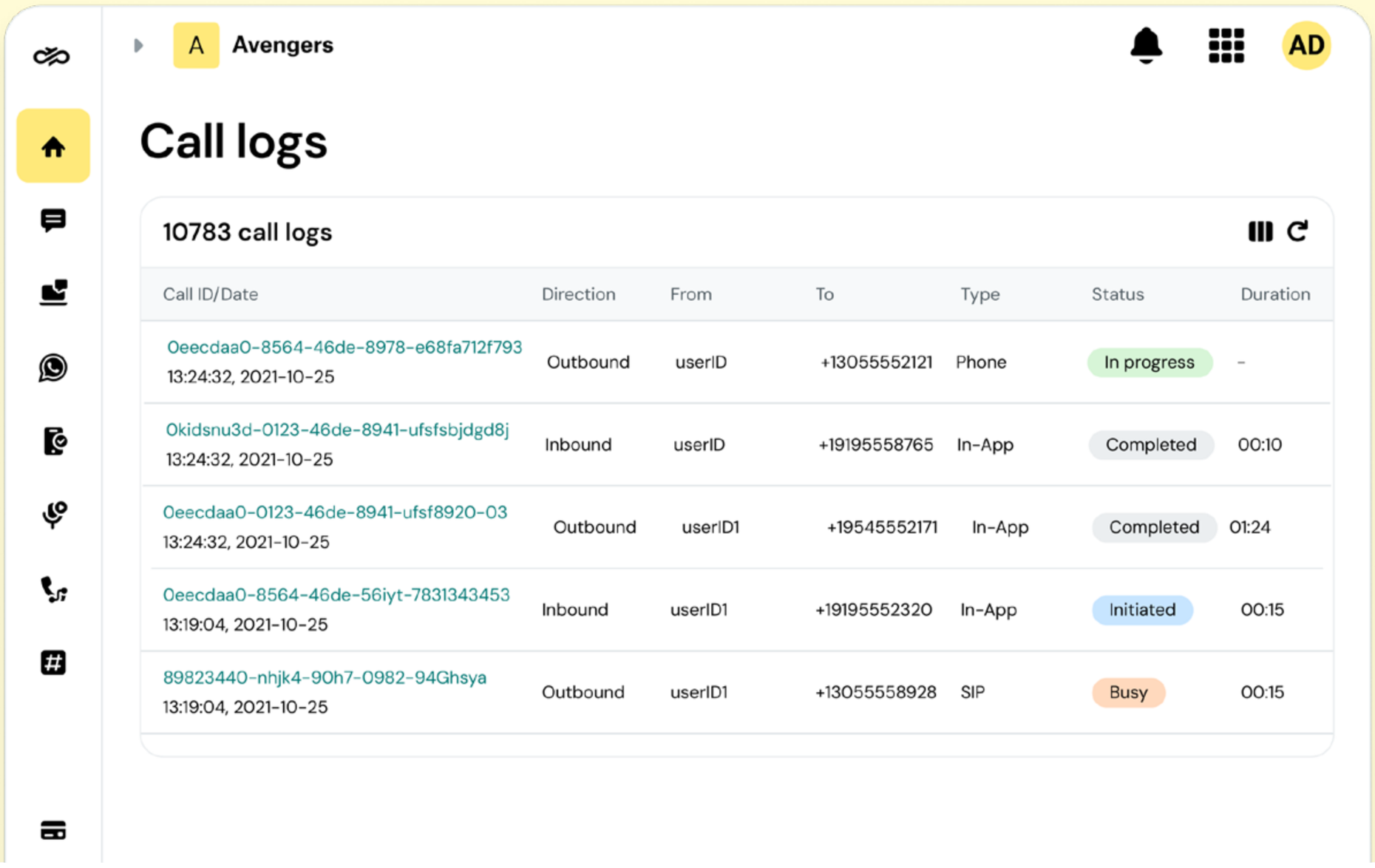
Notes:

Tip: Revisit after pilots–track MOS, PDD, E911 readiness, fraud alerts, and porting milestones.

After evaluating your options and scoring them against business and technical priorities, **you should leave the Define phase with a clear decision and a practical rollout plan.**

For this, first document the modernization path you've selected, along with the rationale behind it. This could be based on cost efficiency, operational simplicity, integration needs, or readiness to re-platform. What matters most is that stakeholders understand why this path was chosen and how it supports broader business goals.

Next, define the scope for your minimum viable deployment. This may be a specific region, department, or use case – something contained enough to validate the new model, but meaningful enough to surface real-world lessons. This scoped rollout will serve as the foundation for what comes next: designing and executing a solution that's built to scale.



DESIGN

D3: Architect the future-state solution in detail

This phase is where your strategy becomes an executable plan. The design process should capture how your new voice architecture will function across teams, regions, and systems, with clear decisions on technology, security, integration, and compliance.

Before jumping into technical specs or architecture diagrams, it's important to align on a few foundational questions.

Key questions during the Design phase:

Answering these questions will shape the overall design and ensure your future-state solution meets both business requirements and user expectations.

1. What channels need to be supported?

Determine which voice channels your architecture must support, whether that's inbound or outbound calls, VR, embedded voice within mobile apps, or digital experiences. Each use case carries different technical implications for call flows, routing, and infrastructure.

2. How will new systems integrate with CRM, helpdesk, or apps?

Your voice solution shouldn't exist in a silo. Define how it'll connect with your core systems, such as Salesforce, Zendesk, or internal tools. Integration is key for delivering context-rich customer interactions and streamlining workflows across teams.

3. What does your global routing and redundancy plan look like?

If you're operating across regions or time zones, routing decisions become more complex. Map out your requirements for call distribution, geographic load balancing, and failover logic to ensure continuous availability – even during outages or peak traffic periods.

4. How will you protect voice traffic end to end?

Designing with security in mind means more than just encrypting media. You'll need to define how signaling is protected, how identity is verified between endpoints, and how your infrastructure defends against fraud or scams like vishing or spoofing attempts.

Vishing (short for voice *phishing*) is a type of social engineering attack where scammers use phone calls to trick individuals into revealing sensitive information like passwords, credit card numbers, or personal details. The caller often pretends to be from a trusted organization like a bank or tech support to gain the victim's trust.

5. What call features do you need?

Finally, define the voice capabilities that matter most for your teams and customers. This might include real-time transcription, call recordings, whisper or barge-in modes for supervisors, or speech analytics to support training and quality assessment.

These questions form the foundation of the design phase and help ensure that what you build is not only technically sound but aligned with business priorities from day one.

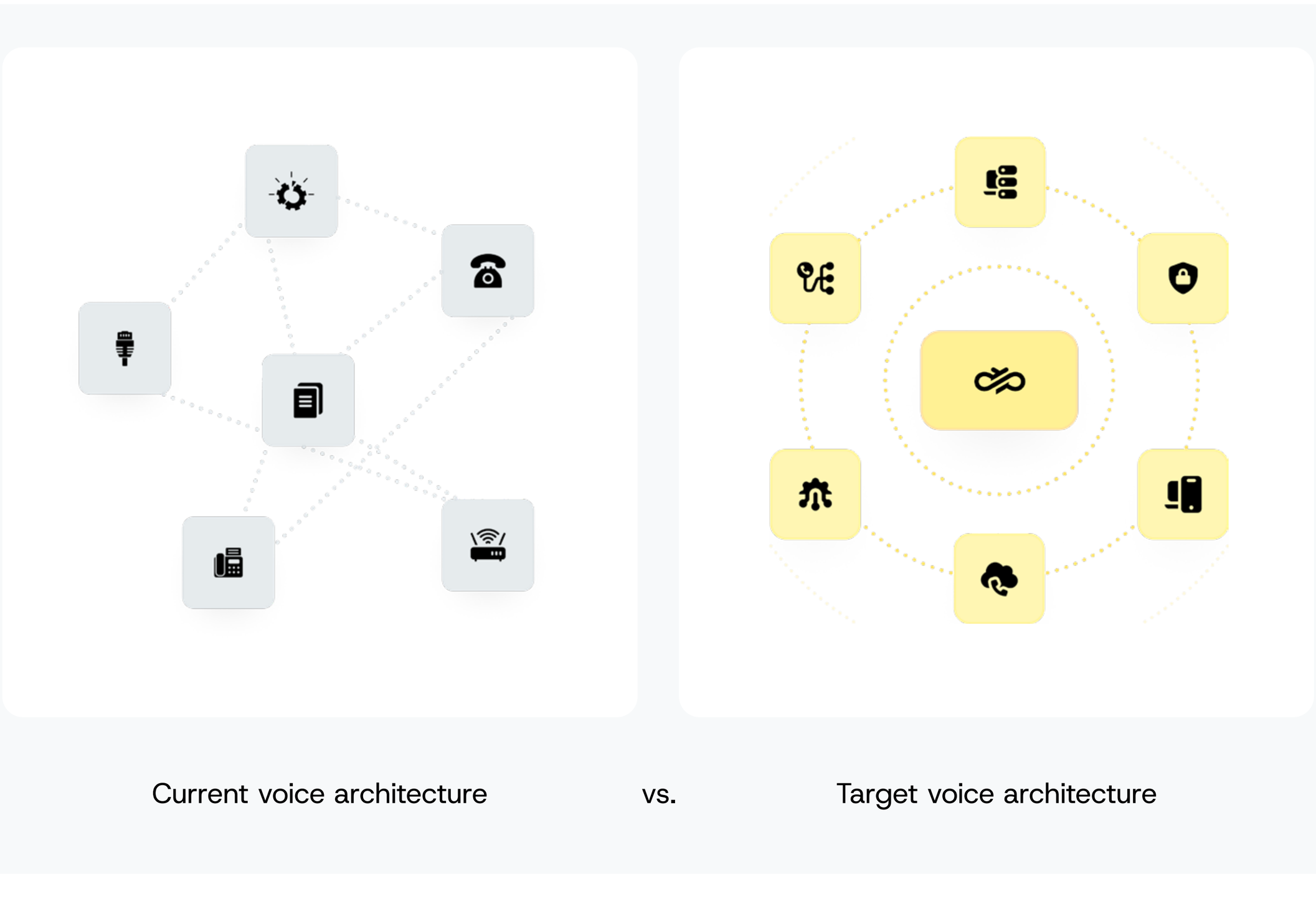
Actions to take during the Define phase:

Map your new voice architecture

Now it's time to turn strategy into system design. This part of the process outlines how your voice infrastructure will actually function, how it connects with existing systems, and how it will scale, stay secure, and remain compliant. The design activities in this phase focus on building a clear, detailed view of the future-state environment.

Start by **mapping your current voice architecture and defining what the target state should look like**. This comparison helps highlight the technical gaps and dependencies that need to be addressed.

Comparison & gap analysis: Technical gaps and dependencies



Current voice architecture vs. Target voice architecture

Next, **identify all integration points**. This includes APIs to connect with internal tools or platforms, SIP gateways for interoperability, and any third-party services that will extend functionality. Once integrations are mapped, design your failover and call routing logic. This should cover everything from time-of-day routing rules to geographic load balancing and handling of service interruptions.

Monitoring and observability should be built in from the start. **Define the key metrics you'll track**, what alerts need to be in place, and how service-level agreements will be enforced or measured.

Finally, **review all legal and compliance considerations**. This includes understanding which regions require data to stay local, how call recordings must be stored, and whether features like call monitoring are subject to regulatory restrictions.

Together, these activities will help create a complete blueprint for what you're building and how it'll operate once deployed.

Targeted output for the Design phase:

Create a blueprint for your intended voice infrastructure

The outcome of this phase is a practical, detailed blueprint for building and deploying your future-state voice infrastructure.

You should have a **technical architecture diagram** that clearly shows how all systems, channels, and integrations will work together. This visual reference keeps everyone aligned – from technical leads to business stakeholders.

An implementation specification should also be created. This provides actionable guidance for your internal developers or vendor partners to begin building the solution with minimal ambiguity or rework.

Finally, make sure you have **a documented security and compliance plan**. This should address encryption, data handling, access controls, and any regional or industry-specific requirements that must be met from day one.

With a clear design in hand, you're ready to move into the next and final phase: deployment.

DEPLOYMENT

D4: Prepare for a controlled rollout

With a complete design in place, the final phase is execution. But instead of launching everything at once, deployment should be approached as a controlled rollout. The goal is to minimize disruption, validate your setup in the real world, and learn quickly before scaling across teams or regions.

Start by answering these critical questions.

Key questions during the Deployment phase:

1. What's the lowest risk use case to test the new stack?

Start with a contained scenario that lets you validate the new infrastructure without disrupting core operations. This might be a single department, site, or use case such as outbound appointment reminders or low-volume support lines.

2. What metrics define success in each phase?

Set clear success criteria before launch. These might include call quality scores, system availability, routing accuracy, agent satisfaction, or customer feedback. Defining KPIs early gives you confidence in knowing when you're ready to move to the next stage.

3. Who needs to be trained or notified?

Identify the teams impacted by the rollout and plan training or communications accordingly. This includes not just contact center agents or IT staff, but also business stakeholders and anyone affected by changes in call flows or tools.

5. What's the plan for parallel-running systems?

Decide how long you'll run legacy and new systems side by side. This dual-ops approach allows for gradual cutover, minimizes risk, and provides fallback options if issues arise during migration.

6. How will we collect feedback and optimize before scaling?

Build in a process to capture input from users and stakeholders throughout the rollout. This feedback loop helps you spot issues early, refine your setup, and build confidence before expanding to the next group or geography.

Once you've answered the key questions, the rollout can begin, but it should follow a phased approach. Rather than flipping the switch all at once, gradual deployment allows you to test, iterate, and build confidence with each stage, from pilot to cutover to optimization.

Deployment phases

1. Pilot one use case

For example, AI text-to-speech voice alerts

2. Dual operations

Run old and new setup in parallel, shift traffic slowly

3. Cutover

Transition all flows, once everything runs smoothly

4. Optimize

Monitor, finetune, and expand

1. **Pilot one use case**: Start with a pilot, such as using CPaaS to power outbound call reminders or a non-critical use case. This gives you a low-risk environment to validate performance and uncover any integration issues.
2. **Dual operations**: From there, move into a dual operations model, where your legacy and new systems run in parallel. This lets you gradually shift traffic to the new stack while maintaining continuity and fallback options.
3. **Cutover**: Once success metrics are consistently met and teams are confident, initiate the cutover, transitioning all relevant call flows to the new platform.
4. **Optimize**: After cutover, continue to optimize. Monitor performance, fine-tune configurations, gather feedback, and expand coverage to new teams, regions, or use cases.

These stages help minimize risk, surface learnings early, and give your teams the time they need to adapt.

Divide your deployment into several phases to minimize risks and improve learnings.

Actions to take during the Deployment phase:

Define processes, from staging to sunsetting

With your deployment plan and phases defined, the next step is execution. These activities help ensure your rollout is stable, measurable, and ready to scale.

- **Start by setting up sandbox and staging environments** to test configurations, call flows, and integrations in a safe environment before going live. This reduces the chance of surprises in production.
- Next, **define rollback plans and fail-safes** to ensure business continuity in case anything goes wrong. This includes clear fallback procedures and technical safeguards that let you revert quickly if needed.
- If your use case allows, **run A/B tests to compare legacy and modern call flows side by side**. This gives you real-world data to assess performance, quality, and user experience before committing to full migration.
- Throughout the rollout, **actively gather feedback from both agents and customers**. Their input will help you identify friction points, fine-tune workflows, and build a solution that truly works on the ground.
- Finally, **begin sunsetting legacy systems and managing vendor contracts**. Plan for platform retirement, support timelines, and commercial transitions, so you can fully shift your investment toward the new infrastructure.

Targeted output for the Deployment phase:

Establish metrics and collect learnings

By the end of the Deployment phase, your organization should have tangible outcomes that validate the new voice infrastructure and provide a clear path forward.

You should have a **successful MVP or pilot deployment** in place – something small enough to manage risk, but representative enough to provide meaningful learnings. This live environment confirms that your design decisions hold up in the real world.

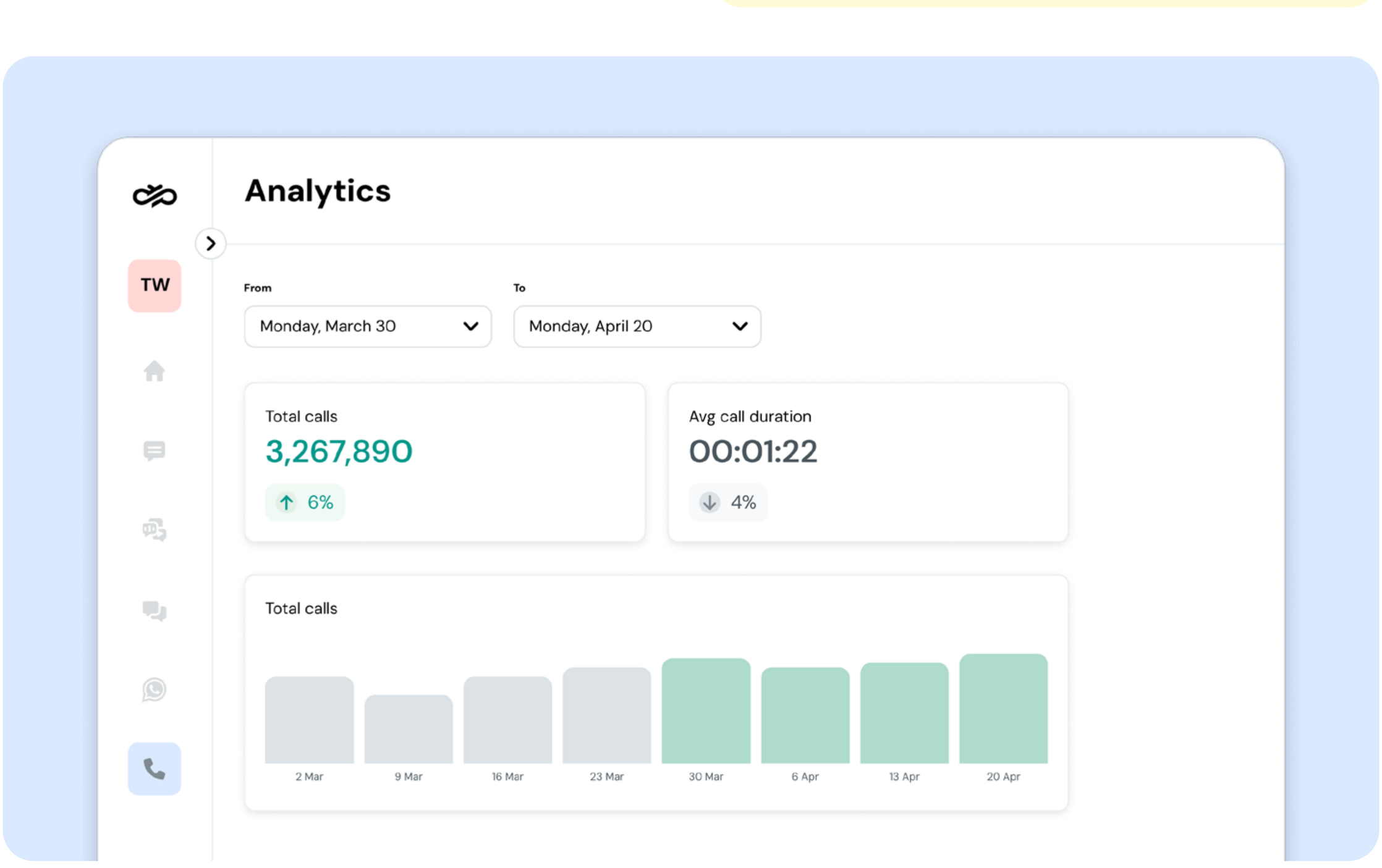
From that deployment, you'll gather **performance metrics benchmarked against your original baseline**. These metrics help you quantify improvements in reliability, efficiency, or customer experience, and they form the foundation for future optimization.

Finally, use the learnings from your pilot to create a **phased migration roadmap**. This outlines how and when additional users, regions, or use cases will move to the new system, including key dependencies and risk checkpoints along the way.

Congratulations! With all four stages of the D4 framework complete, you now have a clear approach for transforming enterprise voice.

But even the best-designed roadmap needs buy-in to succeed.

That's why it's important to plan ahead for internal alignment. Modernization efforts often impact multiple teams – from IT and Information Security to Finance, Procurement, and CX. Each will have different priorities and likely concerns. In the next section, we'll look at who to involve early, what they'll care about most, and how to address concerns, so you're prepared to manage pushback it before it slows things down.



PART III

Who to involve (and what they'll push back on)

Modernizing enterprise voice infrastructure doesn't just involve IT. Success hinges on aligning multiple stakeholders, each with their own concerns, priorities, and influence. If you bring these teams in too late, you risk friction, delays, or even full derailment. But if you engage them early and address their concerns head-on, they can become some of your biggest advocates.

Here's an overview of the most important departments to involve and which concerns you should make sure to address:

Infrastructure and network teams

These are the people who've kept the legacy voice infrastructure running. They understand the current system inside and out, and they'll be skeptical of any change that threatens uptime, quality, or control. Their concerns are often technical, but very real – especially when it comes to performance and risk.

What they care about:

Network latency, jitter, and packet loss. They'll want clarity around SIP trunking, SBC architecture, quality of service, and failover. Internal SLAs and monitoring also falls under their responsibility.

What they'll push back on:

- "Cloud voice isn't reliable enough."
- "We already have carrier contracts and SLAs we trust."
- "This will add more load to our network. Do we need more bandwidth planning?"
- "What happens if the internet drops? We lose voice too?"

How to bring them in:

Get ahead of their concerns by sharing detailed documentation on network impact, failover architecture, and performance benchmarks. Let them own parts of the design, especially around SIP routing and QoS. Involve them in vendor selection, particularly when it comes to evaluating voice quality and interoperability.

Security and compliance teams

They're often the last to be looped in and the first to say "no." That needs to change. These teams are gatekeepers of risk, data governance, and regulatory compliance. Which means that they're being careful for a reason: They're trying to mitigate risks and protect your enterprise. That's why any voice system that touches customer data will need their approval – and you should be in conversations with them from the very beginning.

What they care about:

End-to-end encryption for voice traffic, lawful call recording, vendor certifications (SOC 2, ISO 27001), and regional or industry compliance requirements like GDPR or HIPAA.

What they'll push back on:

- "Where is the voice data stored? Who can access it?"
- "How do we stay compliant with regional call recording laws?"
- "Can we audit vendor traffic flows, logs, and access policies?"
- "What's the impact on our incident response process?"

How to bring them in:

Loop them into technical architecture reviews and share vendor security docs early. Ask for their non-negotiables before narrowing down providers. This helps prevent late-stage roadblocks and ensures your design passes compliance checks before rollout.

Customer support and CX teams

These are the people on the front lines, the ones using the voice tools daily. For them, modernization isn't about SIP headers or codecs. It's about usability, reliability, and performance under pressure.

What they care about:

Agent workflows, IVR logic, escalation paths, analytics, and how voice features tie into the overall customer journey. They'll want to know if features they rely on will be supported and what backup plans exist in case things go wrong.

What they'll push back on:

- "If it breaks, we're the ones getting yelled at."
- "Will agents need new training or credentials?"
- "We can't afford to lose the features we use every day."
- "Why change at all? Our current CX platform works fine."

How to bring them in:

Include them in feature prioritization to make sure mission-critical capabilities aren't lost in the transition. Offer side-by-side demos of old vs new systems. Show them how modernization could streamline call routing or reduce call times – and back it up with data where possible.

Procurement and finance teams

Stakeholders in procurement and finance are in the weeds of technical infrastructure. They focus on budget, contract details, and long-term financial risk. Your plan won't move forward unless it makes economic sense to them.

What they care about:

Total cost of ownership, pricing models (per-minute vs. per-seat), long-term ROI, and whether modernization creates redundant costs during migration.

What they'll push back on:

- "This looks more expensive than what we have now."
- "Why are we moving from predictable telco costs to variable pricing?"
- "Where's the ROI model? We need a business case."
- "Do we have to pay for both systems while migrating?"

How to bring them in:

Prepare a side-by-side comparison of total cost of ownership over a three-to-five-year horizon. Highlight opportunities to reduce cost through improved containment, agent productivity, or automation. Involve them early in contract negotiations, especially when it comes to usage tiers, overages, and sunset timelines for legacy vendors.

With stakeholders aligned and technical concerns surfaced, the path to modernization becomes much clearer.

Let's wrap up with some final guidance and practical insights that can help you avoid common pitfalls.

PART IV

What to know before making the final call and vendor scorecard

By now, you've got a full picture of what modernizing your enterprise voice infrastructure really involves, the teams you'll need to bring along, and a clear framework to guide the journey.

But before you start mapping out your journey, here are a few lessons we've learned from the field where businesses look back and say: "We wish we'd known that before we started!"

It's the details that often get overlooked and can save you major time and rework later.

Latency lives and dies on your network, not just your vendor

Even the best CPaaS or SIP provider can't solve for internal misconfigurations. Your call quality will depend heavily on how well your own network is set up, especially when it comes to firewalls, SBC configuration, and internal routing. If you're not already collaborating closely with your network engineering team, now is the time to do it.

Call recording compliance across countries is messier than you think

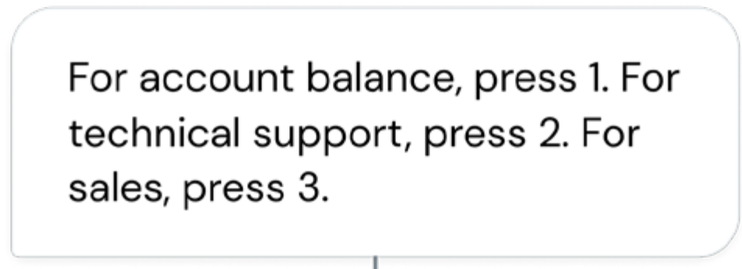
Consent laws differ not just by country, but sometimes by state or use case. In some places, it's one-party consent; in others, all parties must agree and enforcement varies widely. If you're planning a global deployment, work with your legal team early on to map your regulatory zones and determine where (and how) call recording is allowed, stored, and accessed.

Don't migrate during peak season

We know... It seems obvious. But even under pressure to meet project deadlines or budget cycles, too many teams still schedule major changes during high-traffic periods. Avoid scheduling cutovers during seasonal rushes, big campaigns, or fiscal close. Even if you're planning a gradual rollout or parallel environments, we recommend building your migration timeline around low-risk windows, and give teams the space to test, adapt, and stabilize.

Carrier-level voice quality can vary wildly

"Tier-1" means very different things to different providers. Some give you shared routes; others offer direct carrier connections, and yet others manage and operate their own network. Before committing to a provider, ask to test call quality in your key regions. Run sample calls, get real QoS metrics, and compare mean opinion scores (MOS), especially for international or rural routes.



Not sure how to pick a vendor? Save our vendor evaluation scorecard to compare providers side by side – from voice quality and network reach to compliance features and pricing flexibility.

Criteria	Weight	Vendor A	Vendor B	Vendor C	Notes
Technical fit (SIP, APIs, integrations)	25%				
Reliability & redundancy (Uptime SLAs, routing)	20%				
Security & compliance	20%				
Cost & pricing model (TCO, usage-based clarity)	15%				
Scalability & global reach (Regions supported, language, number management)	10%				
Vendor support & account management	5%				
Developer experience and documentation	5%				
Total score	100%				

All in all, modernizing voice takes more than good tech. It means aligning timing, compliance, and internal networks, and working with a provider who can actually deliver on quality and scale.

Why modern voice starts with Sinch

Whether you're looking to cut costs, improve customer experience, expand globally, or move faster as a digital organization, the partner you choose will shape how successful your voice transformation will be.

VoIP INNOVATIONS

"Sinch Voice's network performance, support, and expertise has given us the stability and quality our customers have come to expect."

Sebastian Kiely • President at VoIP Innovations

That's where Sinch comes in.

With a **full suite of voice services** – from elastic SIP trunking to programmable voice API, E911 support, toll-free voice, and UCaaS – Sinch helps you modernize voice without compromising reliability or control. You'll connect to one of the largest, most trusted Tier-1 independent voice networks in the world, used by over 150,000 businesses (including 8 of the top 10 global tech companies).

Elastic SIP Trunking

Scale on-demand as your business requires and achieve global connectivity from a single provider.

Learn more

Voice API

Connect directly to the largest and highest quality tier-1 independent network.

Learn more

Toll-Free Voice

Keep your customers engaged and never miss a toll-free call.

Learn more

Bring Your Own Carrier (BYOC)

Bringing your own carrier allows you to maintain control over your telephony setup. You'll benefit from greater reliability on a carrier network.

Learn more

E911

Stay compliant with E911 regulations and make sure emergency responders have the location data they need to save lives.

Learn more

UCaaS

Collaborate more effectively with comprehensive business phone service and integrated apps for desktop and mobile.

Learn more

STIR/SHAKEN

Fight back against robocalls, increase call answer rates, and build consumers' trust.

Learn more

Wholesale Voice

Achieve unsurpassed quality, reliability, and scale through a single connection with limitless reach.

Learn more

Modernize your voice stack with Sinch

Wherever you are on your path to modernization, Sinch Voice has you covered – with everything from Elastic SIP Trunking and Voice APIs to BYOC, backed by global scale and proven reliability.

Explore Sinch Voice

Glossary of important terms

ACD (Automatic Call Distributor): System that routes inbound calls to the best available agent based on rules/skills.

BYOC (Bring Your Own Carrier): Using your chosen telephony carrier with a UC, CCaaS, or CPaaS platform.

CCaaS (Contact Center as a Service): Cloud-based contact center platform for voice and digital channels.

CPaaS (Communications Platform as a Service): Cloud APIs to embed voice, messaging, and video into apps and workflows.

CX (Customer Experience): How customers perceive interactions with your brand across all touchpoints.

E911 (Enhanced 911): U.S. emergency calling that delivers caller location to the nearest public safety center.

ERP (Enterprise Resource Planning): Suite for core business operations (finance, supply chain) that may integrate with telephony.

GDPR (General Data Protection Regulation): EU law governing personal data handling and privacy.

HIPAA (Health Insurance Portability and Accountability Act): U.S. rules for protecting healthcare data (PHI).

IVR (Interactive Voice Response): An automated phone menu that collects caller input (voice/DTMF) and routes or serves info without an agent.

MOS (Mean Opinion Score): 1 – 5 rating of perceived call quality (higher is better).

PBX (Private Branch Exchange): A company's internal phone system that manages extensions, calls, and routing.

PCAP (Packet Capture): File/trace of network packets used to troubleshoot SIP/RTP issues.

PCI DSS (Payment Card Industry Data Security Standard): Security requirements for handling cardholder data (impacts call recordings).

QoS (Quality of Service): Network traffic prioritization to minimize latency, jitter, and packet loss for voice.

RTP (Real-time Transport Protocol): Standard that carries the actual media (your voice and video) across IP networks during a call.

SBC (Session Border Controller): Network device that secures, normalizes, and controls SIP traffic at the edge.

SD-WAN (Software-Defined Wide Area Network): Software-managed routing across links to optimize reliability/performance for VoIP.

SIP (Session Initiation Protocol): The signaling standard that sets up, manages, and ends VoIP calls.

STIR/SHAKEN: Industry framework that authenticates caller ID with digital certificates to combat spoofing.

TDM / PRI (Time-Division Multiplexing / Primary Rate Interface): Legacy circuit-based voice trunks used before SIP.

TLS / SRTP (Transport Layer Security / Secure RTP): TLS encrypts SIP signaling; SRTP encrypts the media (voice) stream.

UCaaS (Unified Communications as a Service): Cloud-hosted UC (calling, chat, meetings) delivered as a subscription.

Sinch, the Customer Communications Cloud, directly powers meaningful conversations at scale across messaging, voice, and email to help businesses deliver unified, personalized experiences that truly revolve around their customers — no matter the channels they use.

Over 150,000 businesses, including 8 of the 10 largest tech companies in the world, rely on us for their customer communication needs.

We dream big — for our company, our customers, and our employees — and we hire the best talent worldwide to help us bring our vision to life. We have a local presence in more than 60 countries — probably somewhere near you!

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