HyperFRAME RESEARCH

Prepared For: ALIANZA

Alianza Global AI/CSP Study

From Connectivity to Cognition:

How CSPs are Enabling Intelligent Engagement



www.hyperframeresearch.com

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Introduction

The telecommunications landscape is entering a transformative era as Communications Service Providers (CSPs) navigate the shift from traditional communication channels toward orchestrated, multi-experience service environments. As end-user expectations shift, operators face the challenge of seamlessly bridging voice, messaging, video, and digital channels powered by multiple specialized AI models in real time. This evolution demands a fundamental shift in how CSPs approach network architecture, data sovereignty, monetization, and vendor orchestration at a moment when maintaining direct control over subscriber relationships and operational integrity has become a primary strategic directive. Consequently, decisions surrounding AI orchestration are increasingly determining the competitive viability, agility, and long-term relevance of global network operators.

The Global Operators Study delivers data-driven insights into how CSPs are adopting and scaling next-generation AI communications. It tracks how operators are moving from standalone tools to unified platform delivery, highlighting build-versus-partner decisions, revenue strategies, and the backend capabilities required to realize the value of AI-based voice engagement at scale.



This study reflects the perspectives of over 200 senior telecom decision-makers gathered through a global quantitative survey primarily spanning North America and Europe, complemented by 5 in-depth qualitative interviews with executive leadership. All respondents exercise direct authority, oversight, or strategic influence over network architecture, AI strategy, product innovation, and monetization within active carrier-grade networks ranging from regional and rural providers to Tier 1 operators managing over 10 million subscribers.

This study highlights the importance of voice-based engagements, the value of gathering real-time, contextually relevant sentiment, and underscores the need for CSPs to embrace conversational AI as a strategic asset.

The study's scope encompasses the full spectrum of the AI-enabled communications lifecycle. Key areas of investigation include feature-versus-platform adoption philosophies, churn exposure, go-to-market monetization models, data residency and sovereign AI hurdles, multi-vendor operational friction, and architecture gap analyses, specifically around dynamic routing, policy enforcement, and cross-channel context retention.

Together, these insights offer telecommunications leaders, technology vendors, and industry strategists a clear, benchmarked view of how global operators are prioritizing investments, addressing structural operational barriers, and adapting their architectures to lead the next generation of AI-driven communications.

Executive Summary

Across the global telecommunications landscape, operators are actively scaling AI across their technology stacks, transitioning from early public cloud testing toward hybrid, private, and edge deployment models. Across every region, service providers share core operational objectives: expanding multi-model capabilities to enhance customer interactions, moving processing closer to the network edge, and maintaining strict control over proprietary interaction data.

Beneath these universal trends, a major strategic divergence has emerged between regions. Driven by high subscriber churn to AI-native rivals, European operators exhibit immediate defensive urgency, favoring off-the-shelf software, sovereign air-gapped clouds, and real-time vendor observability. Conversely, North American operators face lower immediate churn threats and pursue active monetization through wholesale APIs and hybrid platforms, though they remain heavily constrained by legacy core system integration and third-party data exposure risks.

Table 1. Regional Variance at a Glance

Focus Area	Insights & Supporting Data	Global	Europe	N. America	Regional Variance
AI adoption & churn	**AI ADOPTION APPROACH** Self-identify as Early Adopters taking calculated risks	28%	21%	37%	N. America +16
	PRODUCT ROADMAP PHILOSOPHY Embed AI directly into core offerings	46%	43%	50%	N. America +7
	SUBSCRIBER CHURN TO AI RIVALS Already lost subscribers and call it a growing concern	44%	54%	36%	Europe +18
	FUTURE CHURN RISK No loss yet, but concerned about future AI-driven churn	13%	11%	14%	N. America +3
Monetization & go-to-market	**REVENUE GROWTH DRIVERS** Enterprise-managed AI customer experience tools	66%	67%	64%	Europe +3
	PREFERRED GTM ROUTE Strategic partnerships with core platform providers	53%	51%	57%	N. America +6
	NUMBER OF AI VENDORS Manage/evaluate 3-5 distinct AI vendors	44%	58%	30%	Europe +28
Operational scale	**NUMBER OF AI VENDORS** Manage/evaluate 6+ distinct AI vendors	30%	20%	38%	N. America +18
	NUMBER OF AI MODELS (LLMS) Deploy/evaluate 3-5 distinct LLMs or models	47%	61%	29%	Europe +32
	NUMBER OF AI MODELS (LLMS) Deploy/evaluate 6+ distinct LLMs or models	27%	19%	36%	N. America +17
	OPERATIONAL CHALLENGE Legacy infrastructure integration listed as severe risk	59%	50%	69%	N. America +19
Monetization & go-to-market	**OPERATIONAL CHALLENGE** Managing multi-model environments seen as a severe friction point	46%	54%	38%	Europe +16
	DATA PRIVACY & LLM EXPOSURE 3rd-party LLM data exposure cited as a severe threat	56%	46%	65%	N. America +19
	TARGET ARCHITECTURE (24 TO 36 MO.) Target a hybrid public and private cloud mix	43%	39%	47%	N. America +8
Future architecture readiness	**ESSENTIAL READINESS CAPABILITY** Real-time visibility across vendors as critical capability	49%	58%	38%	Europe +20
	ESSENTIAL READINESS CAPABILITY Centralized policy enforcement essential as critical capability	42%	33%	48%	N. America +15

Adoption & Benchmark Metrics (four-point scale): Low <25% Moderate 25–49% High 50–74% Very high ≥75%

Note: above table highlights parameters with significant deviations between the North American and European regional baselines.

Key regional comparisons:

1

Strategic Motivations Diverge Under Competitive Pressure

AI deployment is now a competitive necessity rather than an experiment. Europe's adoption is largely reactive, driven by active subscriber churn to AI-native rivals, whereas North American operators deploy AI proactively to protect market share and strengthen customer retention.

2

Monetization Centers on Enterprise, but Execution Differs

Managed enterprise AI customer experience (CX) tools represent the largest expected driver of new revenue even as challenges with integrating AI tools with legacy infrastructure indicate a potential gap between traditional connectivity models and AI-based intelligent engagement models.

3

Operational Bottlenecks Threaten Scalability

Vendor and model sprawl is creating significant operational friction. North America struggles primarily with integrating multi-vendor setups into legacy core infrastructure, while Europe faces heavy governance overhead under strict data sovereignty rules.

4

Architecture Moving Toward Unified Control

To resolve data security and vendor management challenges, primary processing is shifting off the public cloud toward hybrid and sovereign environments. Multi-vendor observability, dynamic routing, and centralized policy enforcement are the primary technical capabilities required over the next three years.

Alianza Crux: Bridging Legacy Infrastructure to Power Intelligent, Monetizable CSP Engagement

The study highlights a critical industry paradox: while 71% of global CSPs act as AI front-runners to mitigate subscriber churn, they face operational bottlenecks driven by legacy core infrastructure friction, vendor sprawl, and strict data sovereignty mandates. Alianza Crux™ directly addresses these architectural hurdles by functioning as an intelligent orchestration layer that bridges specialized AI models directly with existing telecom networks without requiring complex custom software overhauls.

When paired with the broader Alianza portfolio, this approach resolves data exposure risks and latency issues by classifying, routing, and governing real-time customer engagements across hybrid public, private, and edge cloud environments - a key value proposition as a majority (54%) of CSPs anticipate leveraging a core communications platform provider to deliver integrated AI experiences to their customers.

Consequently, the combined solution provides CSPs with the native multi-channel continuity, centralized policy enforcement, and real-time observability required to transition from basic bit-pipe connectivity to high-margin, monetizable intelligent engagement.

Section 1

Strategic Adoption, Churn & Go-To-Market Alignment

As CSPs transition from traditional connectivity to AI-driven services, how operators define their long-term AI adoption philosophy is key to understanding both the direction of the market and the risks they face from AI-savvy or AI-native competitors.

In this section:

How aggressively are CSPs deploying AI-based solutions and how does this compare to other technology implementations or initiatives?

Are CSPs treating AI as an add-on feature or will AI become the next core platform of choice?

How has AI already impacted the competitive landscape and customer churn?



The data presented here benchmarks current adoption strategies and quantifies the immediate threat of AI-driven churn, providing critical value by revealing how operators are leveraging integrated AI roadmaps to defend their market share and position themselves for the future.

"I think it's a false choice when you say select one because we're doing all three. So I can give you examples of all three. AI as a feature... AI as an app... and then AI as a platform definitely looking at or AI orchestration across the entire network..." (North American CSP executive)

Question:

Which of the following best describes your organization's overall (or typical) approach to adopting new technologies? And how about specifically relating to the adoption and deployment of AI solutions?

Key Data Points:

Aggressive Tech Adoption Mindset:

69% consider themselves Innovators (40%) or Early Adopters (29%) of new technologies overall.

AI Adoption Readiness:

Specifically regarding AI, 71% consider themselves Innovators (43%) or Early Adopters (28%).

Figure 1. Organizational approach to new technology adoption

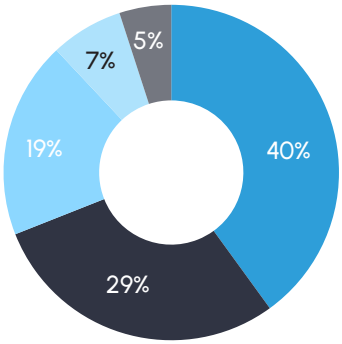
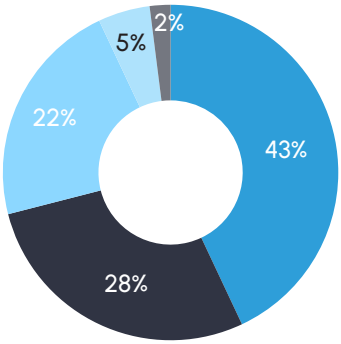


Figure 2. Organizational approach relating to adopting and deploying AI solutions



Innovator (always first to deploy) | Early Adopter (taking calculated risks) | Mass Market Adopter (look for proven business value) | Late Adopter (deploy to remain competitive) | Laggard (low cost, no risk approach)

HyperFRAME Insights:

CSPs are already embracing new technologies at a rapid pace.

The market for telecommunications and network services has been evolving and expanding at a rapid pace over the past decade, with a majority of CSPs describing their organizations as innovators (40%) or early adopters (29%) of new technologies overall.

AI is turning up the heat.

Despite the challenges and costs associated with early AI deployments, CSPs are taking an even more aggressive (proactive) approach with 43% taking an Innovator's approach to AI deployments (first to deploy, willing to undertake risks) and another 28% willing to take calculated risks as Early Adopters (with North American CSPs more inclined to take risks than their European counterparts).

Alianza Crux: Accelerating Telco AI Monetization Through Zero-Friction Orchestration

The Alianza Crux portfolio delivers a strong competitive advantage by eliminating the integration tax, enabling CSPs to frictionlessly deploy and monetize pre-integrated AI experiences, spanning AI-handled, AI-assisted, and post-conversational intelligence, without complex infrastructure overhauls or number porting. Through its centralized Orchestrator, Gateway, and self-provisioning Experience Library, the architecture simplifies developer onboarding through standard APIs while enabling operators to retain direct billing relationships, governance, and subscriber data consent. Moreover, options such as the air-gapped Alianza Citadel Orchestrator provide flexible, sovereign deployment models that enable dynamic multi-experience chaining and real-time call control with zero added latency.

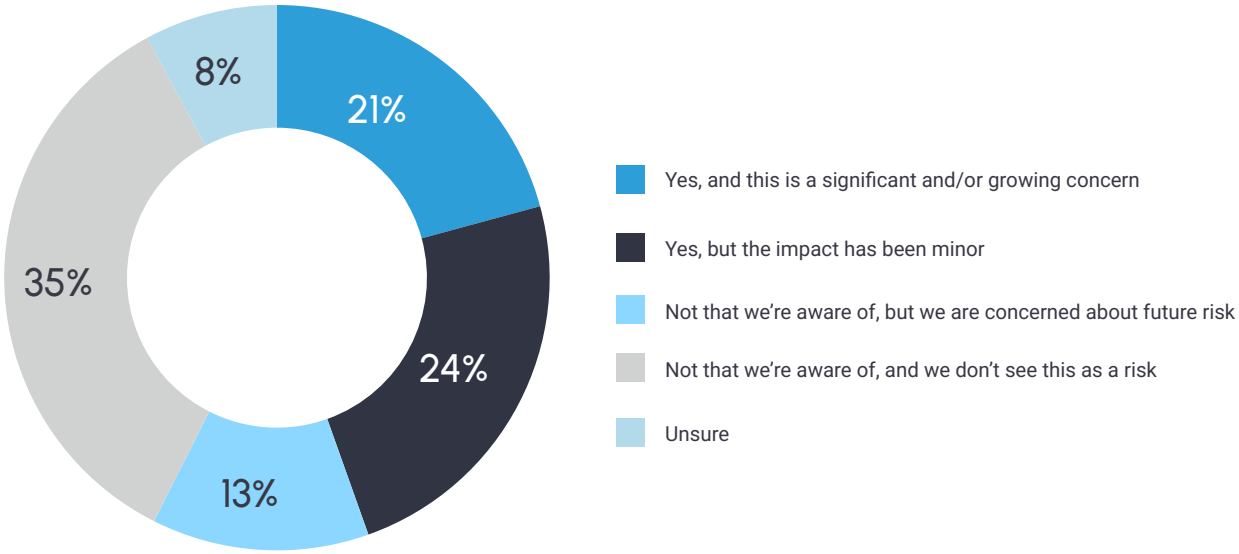
Question:

Over the past 12 months, has your organization lost subscribers or customers (churn) to competitors offering dedicated or differentiated AI-powered or enabled communications services?

Key Data Points:

45% of CSPs have already lost customers to more advanced AI-powered competitors.

Figure 3. Impact of AI-powered competitor offerings on subscriber churn



HyperFRAME Insights:

Embedding AI into existing channels and services makes sense.

For CSPs looking to strengthen their competitive posture and reduce the risk of AI-driven churn, leveraging AI as a mechanism to augment, improve, and expand existing services makes much more sense than deploying it as a stand-alone app or service (with only 16% of CSPs choosing that route).

Platform-level deployments will be key.

We're encouraged that 37% of CSPs in our study have already progressed to the point where they understand the value of a platform-based, orchestration-enabled approach to AI app and services deployment. We anticipate the number of CSPs adopting this approach will increase over the next few years with AI becoming a foundational orchestration layer powering and simplifying AI-based voice and non-voice engagements (chat, text/SMS, email, etc.) with a focus on enabling rather than developing apps and service features.

Top-tier European CSP

The aggressive AI adoption posture demonstrated by 71% of enterprise front-runners directly aligns with the urgent push by a top-tier European CSP to scale AI-driven customer engagements from 20% to 80% over the next three years. Furthermore, the operator's refusal to treat AI as a point solution reflects market survey data showing that 83% of organizations deem AI critical for sentiment monitoring and 37% view it as a foundational orchestration layer across channels. By executing a hybrid cloud core-satellite strategy, the operator resolves severe legacy core friction to protect its proprietary data moat and defend against subscriber churn in a market where 45% of respondents report customer loss to AI-enabled competitors.

Section 2

Contextual Cognition: Customer Sentiment, Engagement & Experience

The future of CSPs and telecommunications services requires a shifting of the network's focus from simple call delivery to real-time conversational understanding and intelligence across voice and other engagement channels. This section examines the necessity of the contextual cognition and experience layer, highlighting the expectations of CSPs as they move beyond basic connectivity to offer deep, multi-channel context, sentiment tracking, and AI-based voice engagements.



In this section:

How important are contextual awareness, sentiment analysis, and conversational continuity across voice and non-voice engagements?

How critical is AI-based voice to the future of customer engagements?

Our study data demonstrates the immense value of persistent conversational context and how real-time intelligent sentiment analysis of both chat and AI-based voice engagements will drive improved customer satisfaction and elevate the CSP's role. The Conversational AI taxonomy categorizes interaction models into Post-Conversational Intelligence (PCI), AI-Handled Conversations (AIHC), and AI-Assisted Conversations (AIAC). PCI extracts strategic insights after call completion via summarization, workflow automation, and aggregate analytics without requiring live, sub-second latency performance. Conversely, AIHC automates end-to-end interactions for high-volume self-service scenarios, while AIAC operates in real time during human-to-human calls to deliver live coaching, compliance enforcement, and fraud detection.

"Maintaining deep conversational context across disparate communications tools or channels i.e. Chat, text, online, self-serve voice is critical to our future offerings... I strongly agree." (Major European CSP executive)

Question:

Please rate your level of agreement with the following statements regarding AI and contextual customer experiences.

Key Data Points:

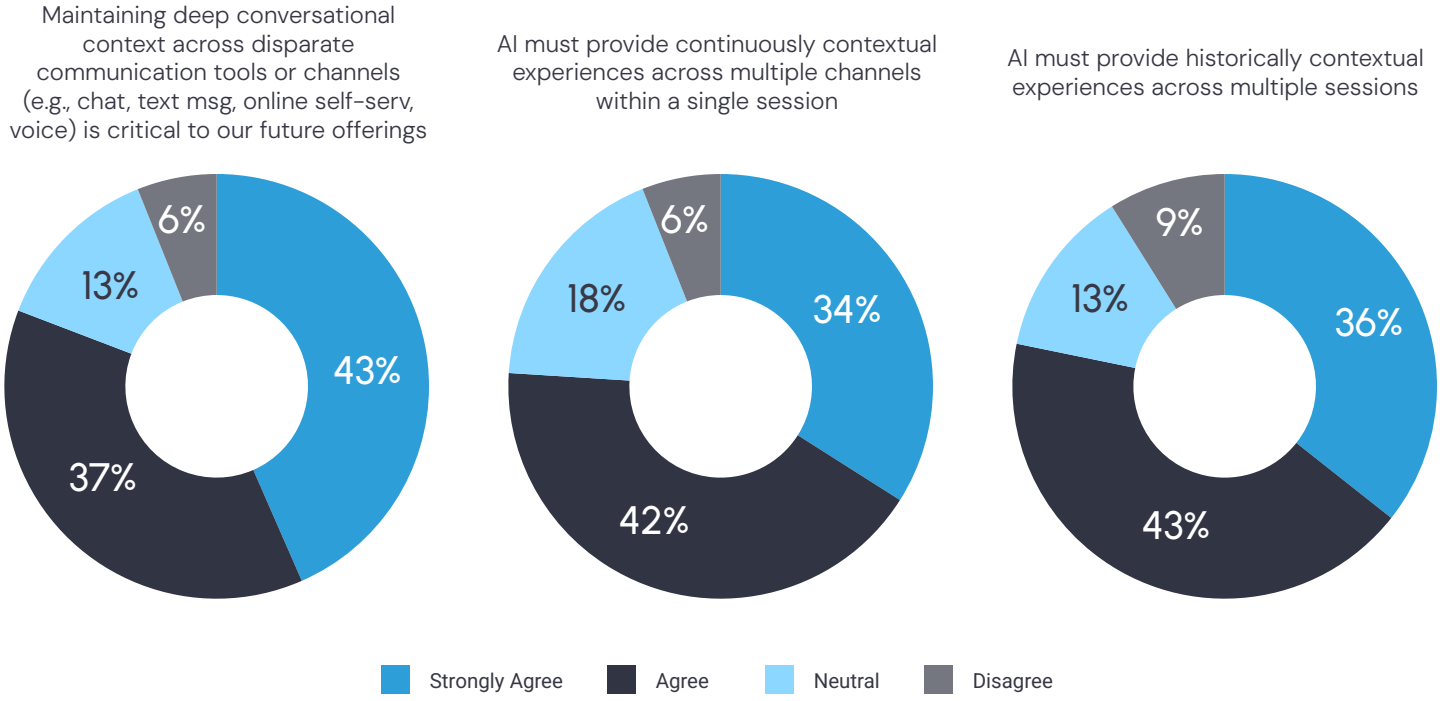
Cross-Channel AI Context Critical:

80% say maintaining conversational context across different engagement channels will be critical to future AI-based services.

Multi-Session Omnichannel AI Context Essential for CSPs:

A majority of CSPs require AI-based services to provide continuously contextual experiences across multiple channels within both a single session (76%) and across multiple historical sessions (79%)

Figure 5. Organizational agreement on AI and contextual customer experiences



Alianza Crux: Streamlining Multi-Experience Telecom AI Orchestration

Alianza Crux provides orchestration capabilities that enable operators to manage and coordinate multiple AI experiences within a single conversation. By natively chaining capabilities such as real-time transcription, dynamic noise suppression, and virtual agent assistance into a unified call flow, the platform eliminates the need for fragmented, single-point AI solutions. This streamlined integration enables CSPs to deliver complex, multi-layered conversational intelligence without adding latency, overhauling legacy infrastructure, or forcing subscribers through cumbersome number-porting processes.

Question:

Please rate your level of agreement with the following statement regarding AI and customer sentiment and satisfaction.

Key Data Points:

83% of respondents view AI as critical for monitoring customer engagements, prioritizing automated measurement of sentiment and satisfaction.

80% of organizations agree (43% strongly agree, 37% agree) that maintaining conversational context across disparate communication tools is critical.

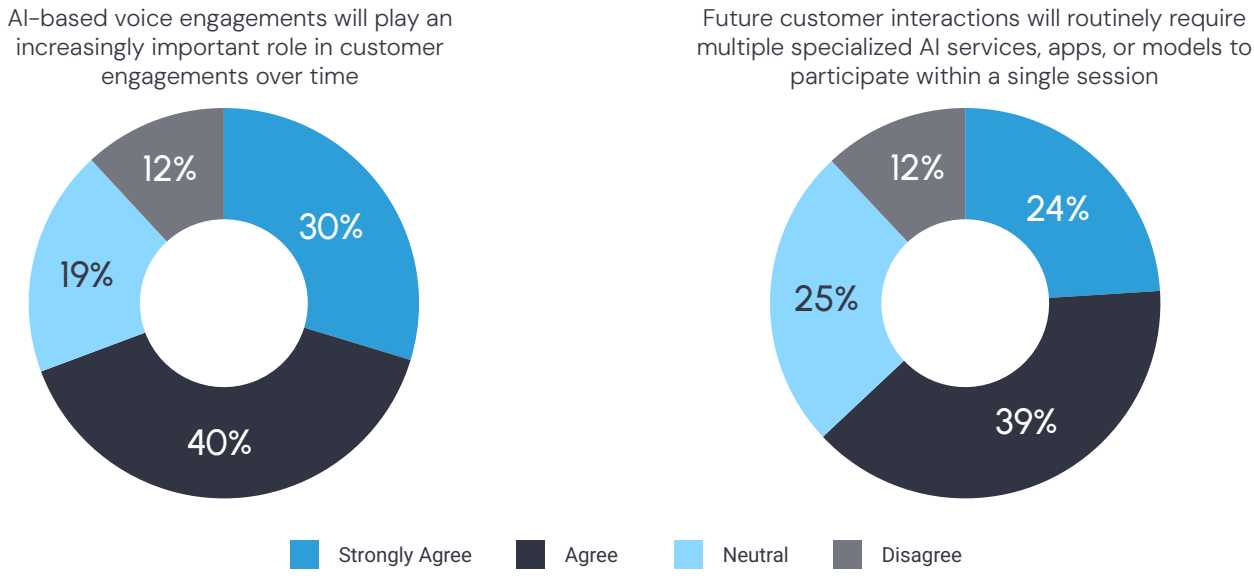
Figure 6. Organizational agreement on AI and customer sentiment and satisfaction



Question:

Please rate your level of agreement with the following statement regarding AI-based customer voice engagements and specialized services.

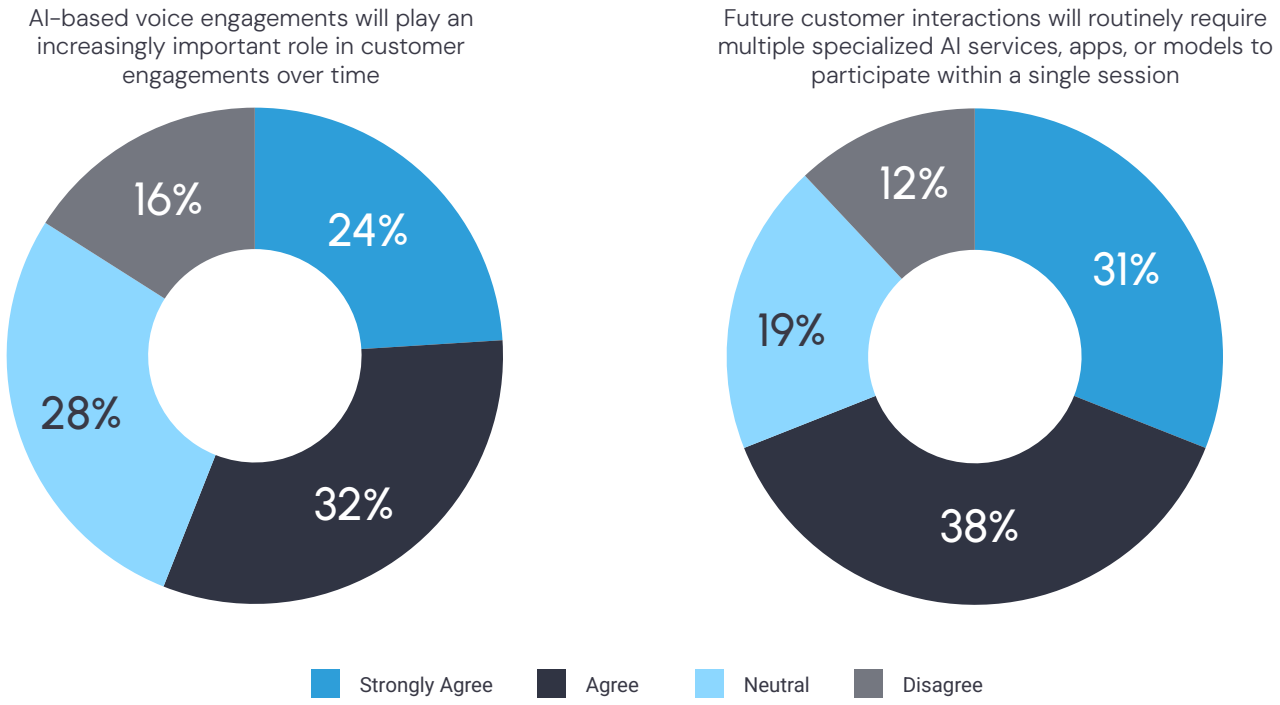
Figure 7. Organizational agreement on AI-based voice and specialized services



Question:

Please rate your level of agreement with the following statement regarding AI services delivery options.

Figure 8. Organizational agreement on AI service delivery options



HyperFRAME Insights:

High Demand for Engagement Monitoring.

83% of organizations agree (43% Strongly Agree, 40% Agree) that AI will be critical in monitoring engagements to measure customer sentiment and satisfaction. This represents the highest overall level of consensus across all surveyed statements.

Context Preservation Across Channels.

80% of respondents agree (43% Strongly Agree, 37% Agree) that maintaining conversational context across disparate communication tools is critical. Only 7% actively disagree with this necessity.

Focus on Multi-Session Experiences.

79% of organizations agree (36% Strongly Agree, 43% Agree) that AI must provide historically contextual experiences across multiple sessions. Persistent historical context is widely accepted as a standard requirement.

Seamless Any-Channel, Any-Tool Experiences.

CSP expectations for highly contextualized experiences across multiple channels and sessions (without drops or interruptions) will require multiple AI services, apps, and models to be called in real time, be available for both new and legacy numbers/services, and be able to seamlessly transition to or co-exist with other channels at the same time.

Top-tier North American CSP

A major North American CSP demonstrated that its transition toward an AI as a Platform model closely mirrors the report's broader industry projections, which estimate that organizations will soon manage an average of 5.18 distinct AI platforms spanning 6.81 communication channels to power 55% of customer engagements. To oversee this expanding multi-vendor sprawl, where the CSP already engages 6 to 10+ core AI vendors, the operator aligns directly with industry priorities by treating centralized policy enforcement as an immediate architectural imperative (42% essential) to maintain strict data ownership across public cloud and private edge environments. Furthermore, the operator's focus on real-time operational visibility and dynamic task-routing directly operationalizes the industry's demand for cross-channel continuity (62%) and automated traffic management, ensuring that interactions smoothly transition between digital app front doors and human agents without sacrificing contextual integrity or inflating token costs.



Section 3

Monetization Expectations & Vendor Strategy

Deploying AI capabilities introduces significant infrastructural costs, making it imperative for CSPs to identify clear, high-growth revenue pathways. This section evaluates the primary monetization drivers and preferred Go-To-Market (GTM) strategies that operators are utilizing to commercialize AI communications.

Top B2B Offerings Driving Revenue Growth



Managed enterprise CX tools

66%



AI-enabled SMB UCaaS applications

51%

Preferred Approach to AI Applications



53%
Partner-Led Platform Ecosystems

17%
Buy Off-the-Shelf Software

29%
Build / Develop proprietary AI communication applications in-house.

In this section:

What role will AI play in driving future revenue growth for CSPs?

How important is control of customer data (and monetization opportunities) to long-term revenue growth?

Will CSPs leverage the value of partners and platforms to reduce the need for internal development and integration efforts (e.g., AI-based voice apps, sentiment analysis tools, services configurations and management)?



As operators navigate the transition to new revenue models, understanding the critical factors driving commercial success, such as strategic partnerships and AI-powered experiences, is essential. The data mapped in this section highlights where operators expect the highest communications revenue growth over the next few years and offers the foundation for a blueprint for aligning vendor relationships with tangible, monetizable outcomes.

"the advanced contextaware AI... this is the peanut butter and chocolate moment where you're able to connect legacy telecom communications models of again minutes, megabits and messages... AI is really pulling allows you to completely change that paradigm and rethink the question literally... to act on it better." (TaaS Provider Executive)

Question:

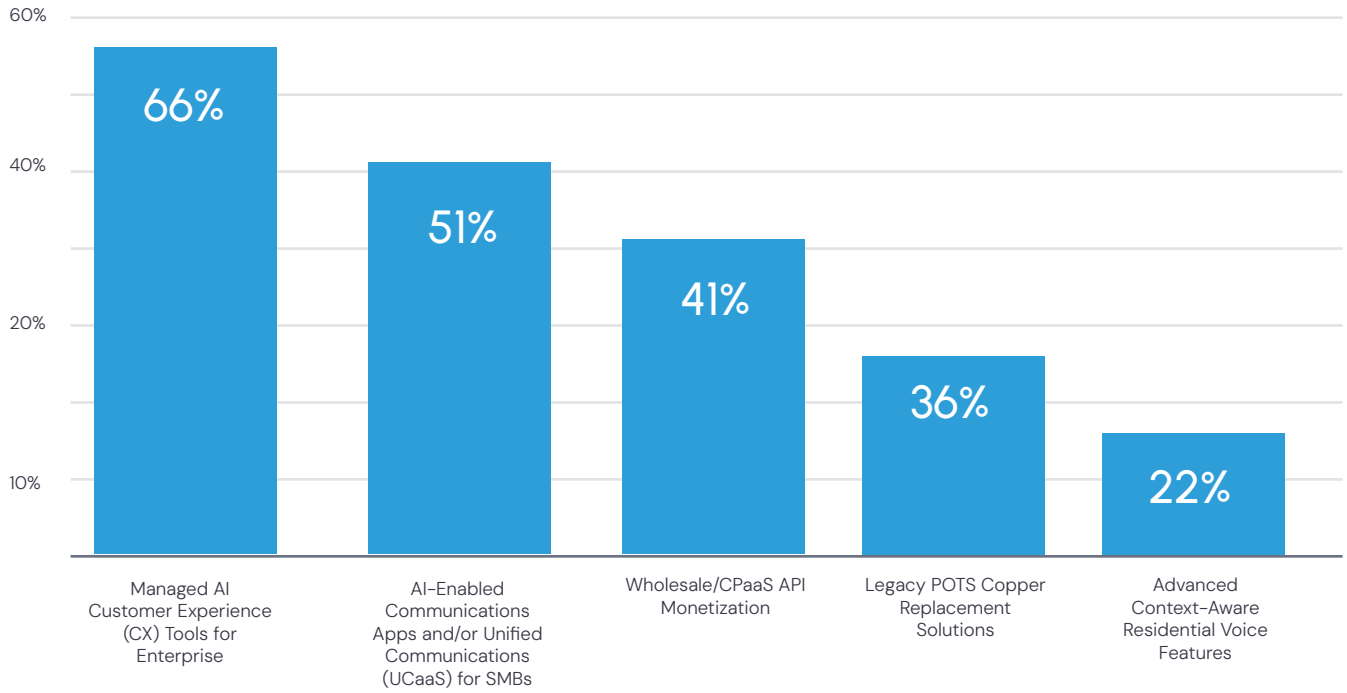
In which of the following do you expect the highest communications revenue growth for your organization over the next 3 years?

Key Data Points:

66% of organizations rate managed AI customer experience (CX) tools as a primary growth driver.

41% expect wholesale and CPaaS API monetization to drive high revenue growth.

Figure 9. Communications revenue growth drivers over the next 3 years



HyperFRAME Insights:

Managed Enterprise AI as Primary Growth Driver.

Managed AI customer experience (CX) tools, such as enterprise autonomous agents and AI CX Suites, for enterprise is the top expected revenue growth driver at 66%, followed closely by AI enabled communications apps and UCaaS for SMBs at 51%.

Sustained Relevance of API and Legacy Replacement.

Wholesale/CPaaS API monetization is expected to drive high growth for 41% of organizations, while Legacy POTS copper replacement solutions account for 36%.

Question:

When deploying new AI-powered communication experiences, what is your organization's preferred go-to-market approach?

Key Data Points

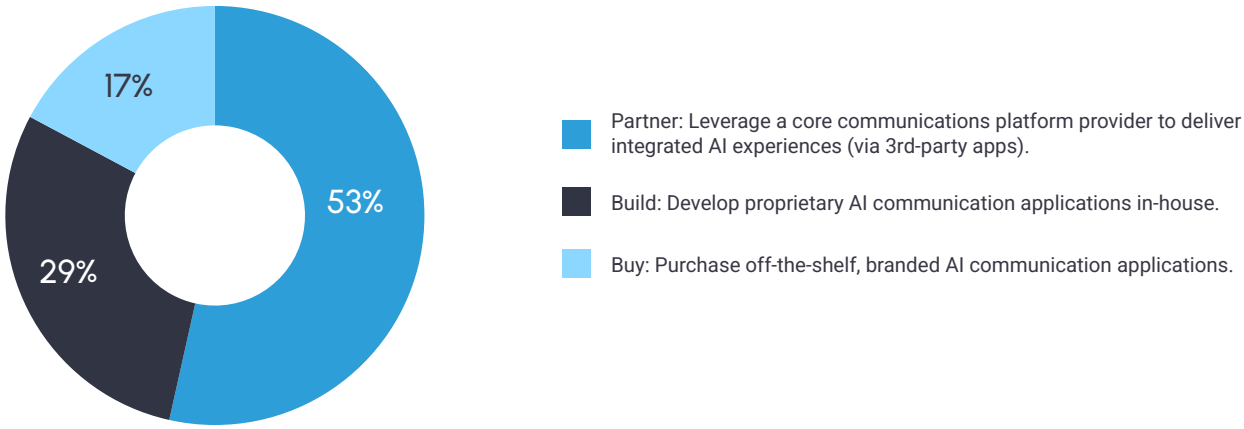
Dominance of Partner-Led Ecosystems.

Over half (54%) of organizations prefer to partner, leveraging a core communications platform provider to deliver integrated AI experiences.

In-House Building Outpaces Off-the-Shelf

29% of organizations choose to build proprietary AI communication applications in-house, making custom development the second most preferred route.

Figure 10. Preferred Go-To-Market approach for deploying new AI-powered communication Experiences



HyperFRAME Insights:

Enterprise AI CX Dominates Revenue Projections.

Managed AI customer experience (CX) tools represent the largest single growth opportunity for providers, with 66% of organizations flagging them as a primary revenue engine over the next three years—outstripping SMB-focused AI communications apps and UCaaS (51%) by 15 percentage points.

Diversified Monetization Beyond Core AI.

Mid-tier growth drivers remain firmly anchored in infrastructure and API commercialization, where wholesale CPaaS/API monetization (41%) and legacy POTS copper replacement (36%) together capture significant enterprise investment alongside pure-play AI applications.

Alianza Crux: The Orchestration Engine for Cognitive Communications

Alianza Crux is the orchestration and intelligence control plane for Cognitive Communications, connecting communications infrastructure, subscribers, policy, and AI experiences. Through the Alianza Crux Connector and Alianza Crux Gateway, the architecture links service provider network components directly into a cloud-hosted orchestration layer. This setup synchronizes configuration stores and call control elements to manage live call orchestration across external AI providers without overhauling existing call control infrastructure.

Question:

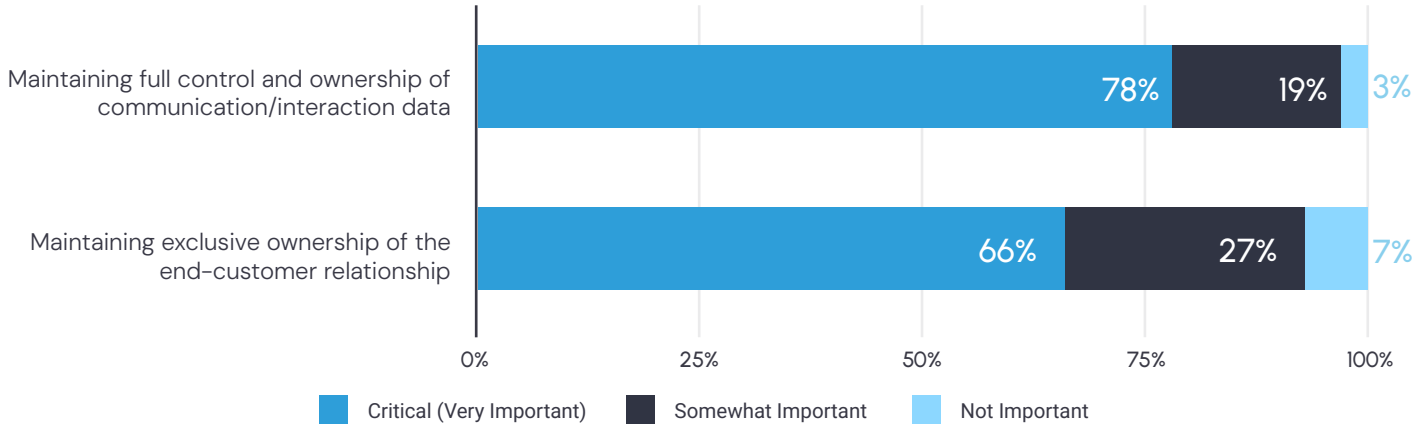
How critical are the following factors to your organization's monetization strategy?

Key Data Points:

78% of organizations rate full control and ownership over interaction data a critical monetization factor.

66% of organizations rate ownership of end-customer relationships a critical monetization factor.

Figure 11. Criticality of factors for organisations' monetization strategy



HyperFRAME Insights:

Strategic Priority of Data Ownership.

78% of organizations identify retaining full control and ownership over interaction data as a critical pillar of their monetization strategy, with 97% acknowledging its importance. This underpins why CSPs want orchestration and runtime to happen in their networks rather than outside, providing the warrant for implementing the orchestration platform that boosts retaining customers and increases overall value proposition.

In-House Building Outpaces Off-the-Shelf

Exclusive ownership of the end customer relationship is critical for 66% of respondents;including those who view it as somewhat important, 93% of the market prioritizes direct customer control. This priority fully aligns with enabling end users to integrate multiple, new AI experiences into their existing phone number/service.

TaaS Provider

The Telecom-as-a-Service model directly mirrors broader industry trends, particularly in its alignment with market demands for high-value B2B AI offerings and partner-led platform ecosystems (54% market preference) rather than rigid, off-the-shelf software. By maintaining strict in-house governance to keep interaction data within its corporate public cloud boundary, the TaaS model operationalizes the primary monetization priority shared by 78% of organizations: retaining full control over data sovereignty and the end-customer relationship. We see that the TaaS model's reliance on multi-model vendor stacks and partner capabilities to deliver context-aware intelligence enables it to drive new revenue streams across traditional telecom assets without compromising core operational reliability.

Section 4

Deployment Architectures, Governance & Data Sovereignty

Realizing the value of AI requires robust deployment architectures that strictly adhere to data sovereignty, security, and governance requirements. This section addresses the structural constraints CSPs face when evaluating primary deployment approaches for processing AI interactions. Because regulatory compliance and proprietary data protection are non-negotiable for carriers, understanding the barriers to deployment is critical.

Multi-Entity AI Ecosystem Density

AI ecosystems are increasingly complex, with providers operating across multiple vendors, models, and applications.



44% Vendor



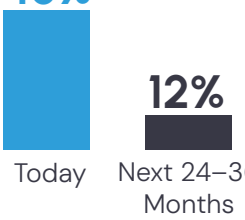
47% Models

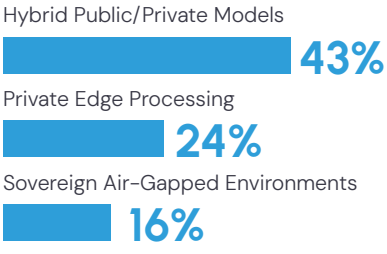


38% Applications

Shift to Hybrid & Sovereign Edge

Operators are moving away from public-cloud dependence toward more distributed, private, and sovereign infrastructure.





In this section:

How are governance and regulatory issues impacting AI deployments?

How will AI workloads and deployment models evolve over the coming years?



Our study data outlines current and projected (24-36 month) deployment architectures alongside estimated deployment and AI scalability requirements, illustrating how operators must find a way to balance the need for advanced AI capabilities while remaining within the rigid governance boundaries necessary to maintain ecosystem trust.

"the advanced contextaware AI... this is the peanut butter and chocolate moment where you're able to connect legacy telecom communications models of again minutes, megabits and messages... AI really allows you to completely change that paradigm and rethink the question literally... to act on it better."
(TaaS Provider Executive)

Question:

When processing AI-driven communication interactions, which deployment architecture does your organization currently use or prefer today (your primary approach) and what do you anticipate 24-36 months from now?

Key Data Points:

Public-only cloud deployments will decline from 48% today to 12% over the next 24–36 months.

43% of operators plan to migrate to hybrid architectures over the next few years.

Figure 12. Current preferred deployment architecture for AI-driven communication interactions

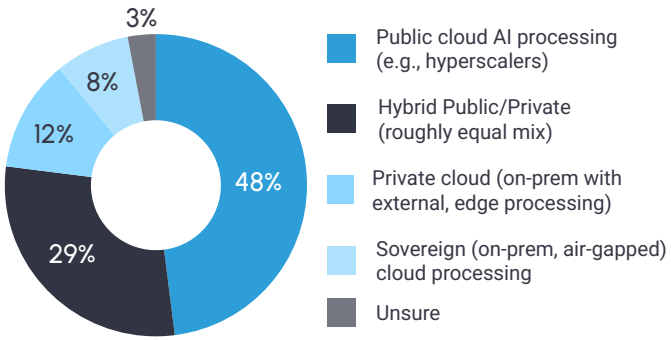
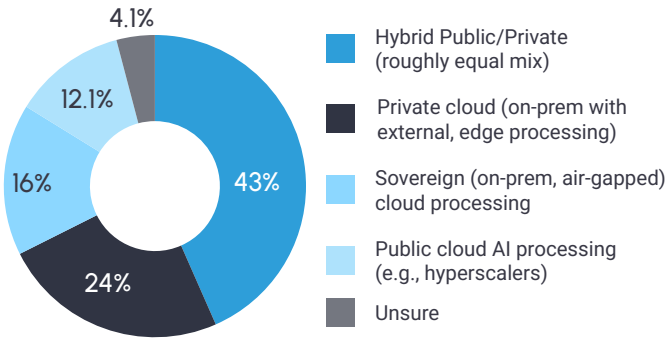


Figure 13. Anticipated 24–36 month primary deployment architecture for AI interactions



HyperFRAME Insights:

The Public Cloud Evolution.

CSPs currently rely on public cloud hyperscalers as their primary AI processing environment, in part driven by early ease of deployment. However, public cloud usage trends from 48% today down to 12% over the next 24–36 months, marking an industry migration away from public cloud.

Hybrid Cloud Becomes the Standard

43% of operators anticipate migrating to hybrid public/private environments over the coming years, making hybrid processing the dominant future model for telecom AI.

Surge in Sovereign and Edge Computing

Private edge cloud adoption grows to 24%, while sovereign air-gapped processing roughly doubles to 16%, so that 84% of all future deployments prioritize non public cloud environments.

Alianza Crux Citadel Orchestration: Air-Gapped Sovereign AI for Telecom Networks

Alianza Crux Citadel Orchestrator provides a fully air-gapped, on-premises deployment option that keeps sensitive data and AI voice operations entirely within the provider's environment. Designed to deploy as a VNF or CNF on Kubernetes, virtual machines, or bare metal, it ensures complete data sovereignty while integrating directly with an IMS Core and Media Resource Function (MRF). As a signaling-aware and media-agnostic platform, it supports dynamic mid-call control and allows chaining multiple experiences—such as transcription, noise reduction, and AI receptionists—in a single call flow.

Question:

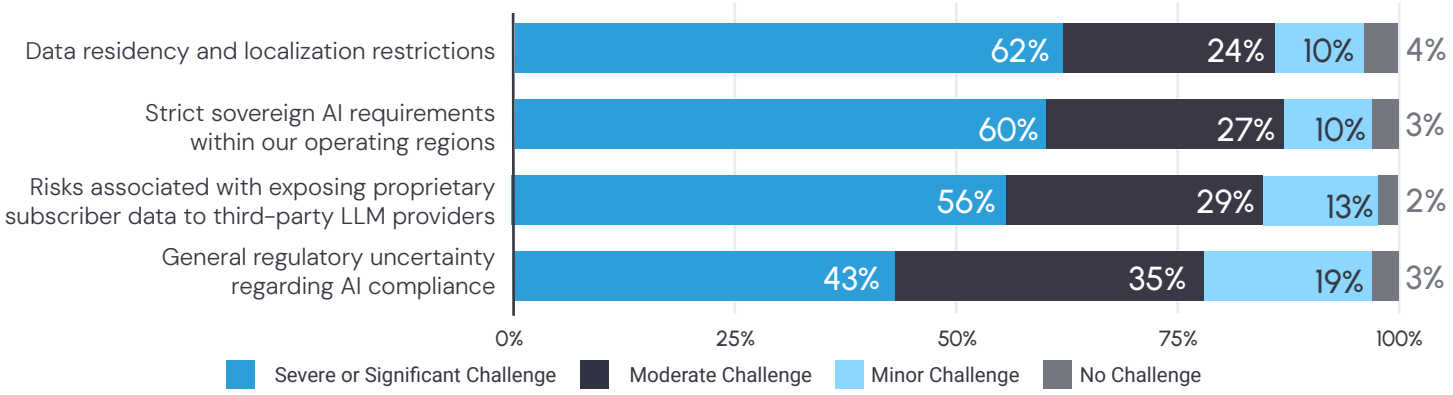
Please rate the level of challenge or barrier your organization faces (or expects to face) regarding the deployment of AI-powered communications services.

Key Data Points:

62% of operators rate data residency and localization restrictions as a severe challenge.

60% of operators rate regional sovereign AI requirements as a severe barrier.

Figure 14. Level of challenges or barriers to the deployment of AI-powered services



HyperFRAME Insights:

Data Residency Is the Top Deployment Barrier.

62% of operators identify data residency and localization restrictions as a severe challenge, making local data storage and processing the single largest hurdle in scaling AI. Consequently, telcos are essential to fulfilling governance, policy and regulatory frameworks, evolving policy and regulatory compliance is built into the telecom network governance, policy and regulatory frameworks. Ensuring application developers are not burdened with meeting complex data residency requirements.

Sovereign AI Directives Threaten Expansion.

60% cite strict regional sovereign AI requirements as a severe barrier, forcing operators to align model deployment with region specific compliance standards before they can scale. As a result, operators need intelligent orchestration to deliver the dynamic abstraction layer key to automatically classifying, routing, and enforcing region-specific data sovereignty and policy guardrails across hybrid edge-cloud environments without re-architecting underlying network infrastructure or fragmenting model deployment cycles.

Top-Tier European CSP

A top-tier European CSP's strategic migration away from standard public clouds directly addresses the broader industry's response to critical governance barriers, where 62% of operators identify data residency and 60% cite sovereign AI directives as severe deployment hurdles. By leveraging a hybrid edge architecture, scaling its proprietary sovereign edge sites while using cloud hyperscalers for massive volume processing, the European CSP safeguards 100% in-house control over subscriber data to bypass cross-border regulatory risks. This sovereign edge positioning enables the CSP to safely manage high-density AI operations across its 30+ tools and 5 core model providers while mirroring the industry-wide shift toward non-public cloud infrastructure over the next 24 to 36 months.

Section 5

The Scope of AI Deployments

As AI adoption accelerates, CSPs must manage an increasingly complex web of distinct vendors, models, and AI tools across their communications stack. This section explores the scope of AI evaluations and deployments CSPs will face over the coming years.

44%

of CSPs are currently evaluating or deploying 6 or more AI apps across their communications stack.

30%

of CSPs are currently evaluating or deploying 6 or more AI vendors as providers within their communications stack.

55%

CSPs anticipate an average of 55% of all customer engagements will be AI-enabled within three years.

In this section:

How are governance and regulatory issues impacting AI deployments?

How will AI workloads and deployment models evolve over the coming years?



Despite the risks of AI sprawl and the complexities of managing multi-vendor, multi-tool operations, CSPs are anticipating a diverse and complex deployment of AI technologies across their communications stack.

"We intentionally maintain a diverse AI ecosystem across like conversational AI and speech orchestration and analytics and LLM providers because I love the analogy of we're still in the dating phase... I'm not willing to put a ring on any of the fingers yet. We're going to stress test all of them or many of them that seem most promising... right now it's 20 [percent], by then it will be 80% [of customer-facing engagements that utilize AI]." (Major European CSP Executive)

Question:

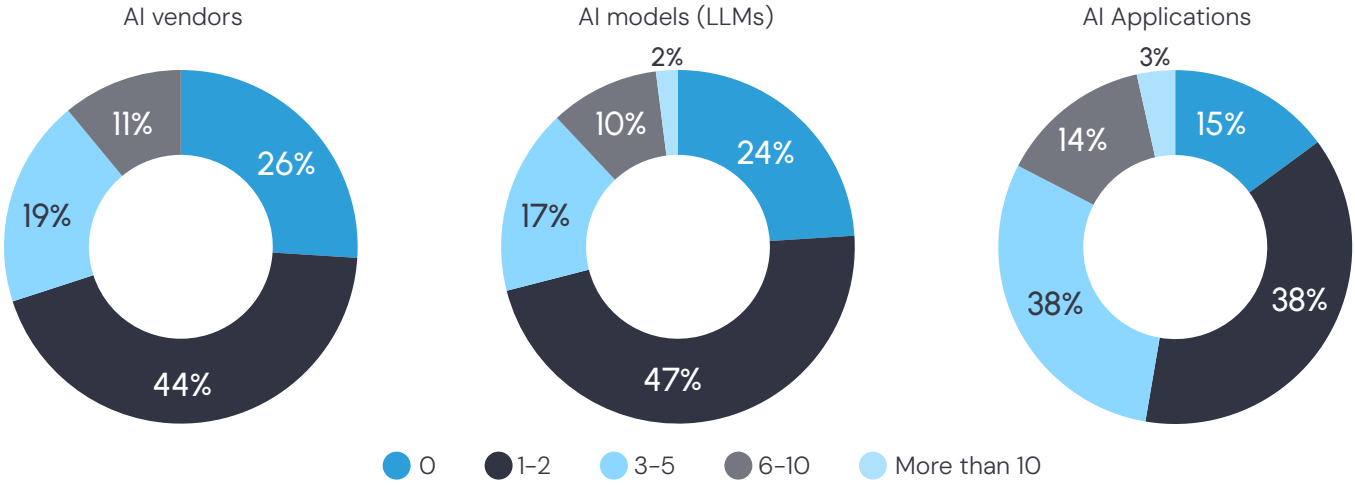
Approximately how many distinct AI entities (vendors, models, and tools) is your organization currently evaluating or deploying across your communications stack?

Key Data Points:

82% of CSPs are managing three or more AI applications/tools and 74% are running three or more distinct AI vendors and LLM models across their communications stack.

44% of CSPs are deploying six or more AI tools (including 14% managing over ten).

Figure 15. Number of AI entities (vendors, models/llms, and applications/tools) evaluated or working with / running across communications stack



HyperFRAME Insights:

Universal Multi-Layer Adoption (The "3–5" Sweet Spot).

The vast majority of operators settle into managing 3 to 5 distinct entities across every layer of their AI stack: 44% for Vendors, 47% for Models, and 38% for Applications. Intelligent orchestration acts as a secure control plane that anonymizes, policy-checks, and routes sensitive queries strictly within localized or private cloud boundaries, ensuring proprietary subscriber data never leaks to public third-party LLMs while still leveraging multi-model AI capabilities.

High-Density Ecosystem Sprawl (3+ Entities).

The vast majority of service providers now operate in high-density AI environments, maintaining multi vendor networks (74%) and multi model frameworks (74%) alongside an expansive suite of AI tools (82%). Such environments warrant intelligent orchestration acting as a dynamic context and routing engine that interprets user intent, normalizes data, and frictionlessly switches tasks across vendor-specific network APIs, specialized LLMs, and enterprise tools within a single thread - delivering cohesive, fluid customer experiences without breaking conversational context.

High Complexity at Scale (6+ Entities).

Enterprise-scale environments are significantly impacted by application-layer sprawl, with 44% of CSPs running 6 or more tools, including 14% running more than 10. The vendor and model layers follow closely, where 30% manage 6 or more vendors and 27% manage 6 or more models, creating substantial operational fragmentation and management overhead across communication stacks.

Question:

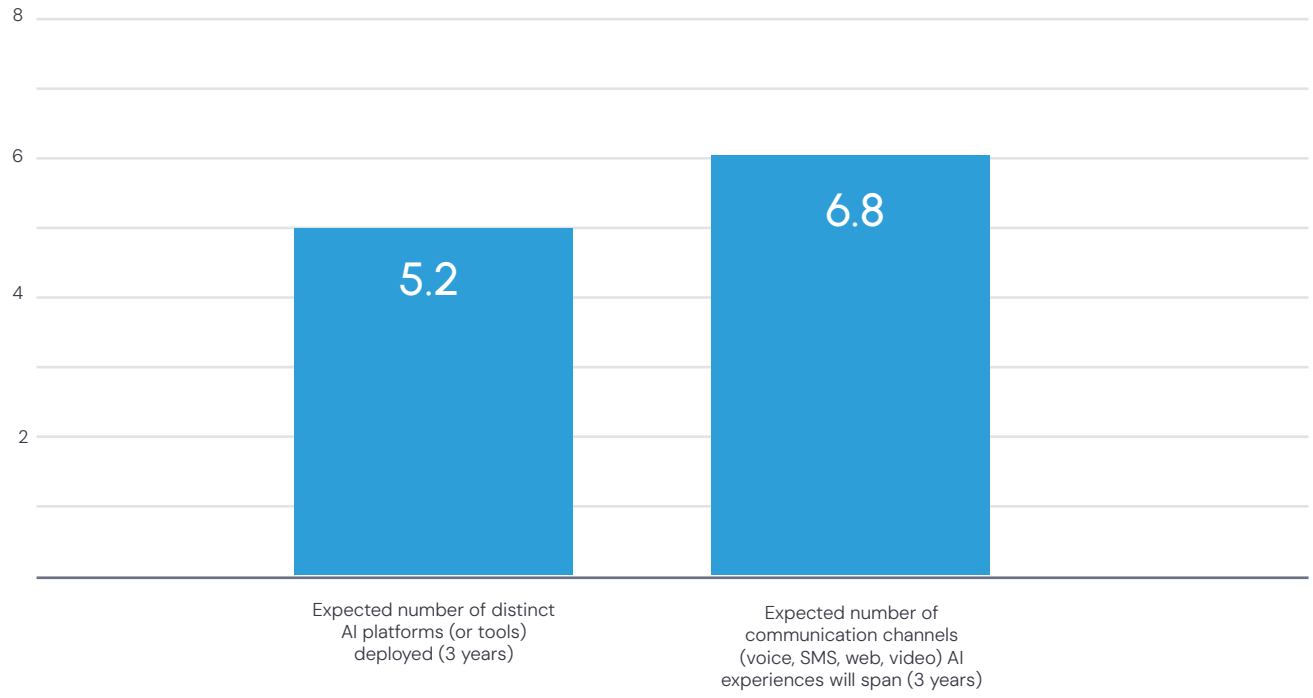
Looking ahead 3 years, please provide your best estimate for the scale of your AI communications environment.

Key Data Points:

CSPs anticipate deploying an average of 5 distinct AI platforms or tools over the next three years,

Enterprise AI implementations are projected to span an average of 7 communication channels over the next three years.

Figure 16. Projected 3-year scale for AI platforms deployed and communication channels spanned



HyperFRAME Insights:

Managing Multi-Platform Sprawl.

Organizations estimate they will deploy an average of 5 distinct AI platforms (or tools) over the next 3 years, reflecting a shift toward multi-platform environments that require centralized orchestration to manage tool sprawl effectively.

Native Cross-Channel Expansion.

Organizations expect their AI experiences to span an average of 7 communication channels (including voice, SMS, web or app chat, video, etc.) over the next 3 years, highlighting the growing mandate for seamless, unified conversational experiences across diverse customer touchpoints.

Question:

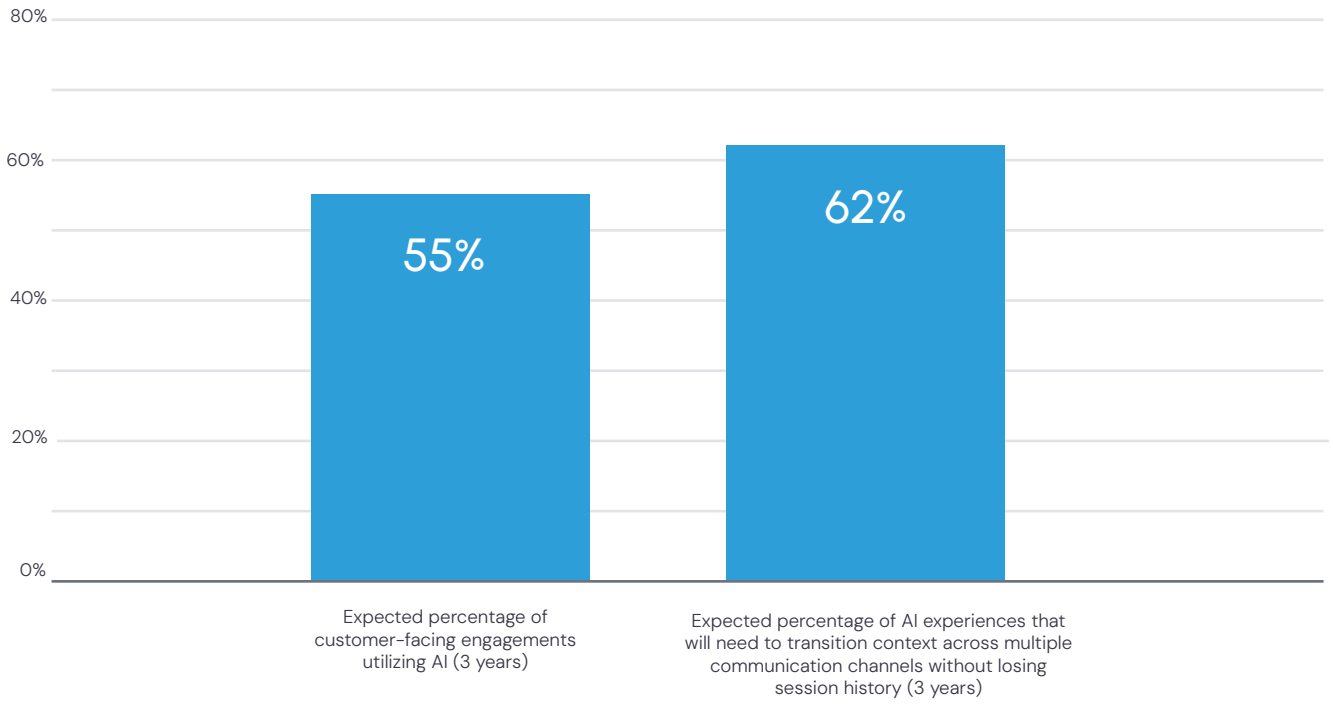
Looking ahead 3 years, please provide your best estimate for the scope of AI-enabled customer engagements.

Key Data Points:

55% of all customer-facing communications are projected to be powered by AI within the next three years, establishing AI as a primary interaction layer for enterprise communications.

62% of AI deployments will require continuous conversational history and context retention across transitions between different channels (e.g., from digital web chat to live voice).

Figure 17. Projected 3-year percentage of customer engagements utilizing AI and cross-channel context needs



HyperFRAME Insights:

Ascendance of AI-Driven Engagement.

Industry projections indicate that 55% of customer-facing interactions will be powered by AI within the next 36 months, solidifying its role as the foundational interface for enterprise communications. This provides the warrant for implementing an orchestration platform that can manage all these interactions.

Criticality of Cross-Channel Continuity.

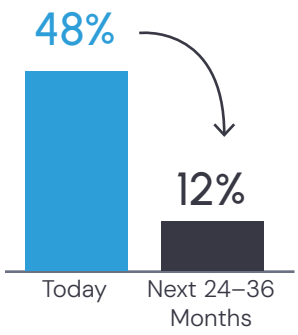
A substantial 62% of AI deployments must maintain persistent conversational history during channel transitions such as moving from digital chat to voice to eliminate friction and ensure contextual integrity.

Section 6

Operational Challenges & Intelligent Network Architectures

As CSPs shift their business models from connectivity-driven services to more advanced AI-enabled engagement models, the risks of operational bottlenecks and administrative friction resulting from complex multi-tool/multi-app implementations highlights the need for AI strategies that leverage platforms and partnerships to simplify the tasks at hand.

Public Cloud Reliance Is Declining



43% of operators are transitioning to hybrid public/private environments to mitigate data privacy risks.

Primary Scaling Hurdles

Evolving regulatory compliance mandates

61%

Integrating AI with legacy core infrastructure

59%

Operational Control Priorities

Real-time third-party analytics (essential)

49%

Centralized policy enforcement (essential)

42%

Dynamic interaction routing (essential)

39%

In this section:

How significant are the operational challenges CSPs face in deploying AI-based services?

How important are platform-enabled features (e.g., cross-app analytics, centralized policy enforcement, dynamic or rule-based app selection) to network architecture readiness?



For CSPs, the need and value of an intelligent network architecture capable of dynamic interaction routing, centralized policy enforcement, and real-time visibility is clear. The results of our study highlight the complexity and operational challenges operators face and reinforces the value of orchestrational capabilities within an intelligent, multi-vendor layer to operate AI services at true carrier scale.

"This is a horrible challenge... The most severe challenge is our legacy systems are just a mess. We've been operating in this field for more than 30 years... it's super fragmented, it's super granular... As organizations adopt multiple AI providers... orchestration, governance, intelligent routing is a mandatory essential core architectural capability rather than just an optional feature. It all breaks down to the NPS... maximizing customer value." (Major European CSP Executive)

Question:

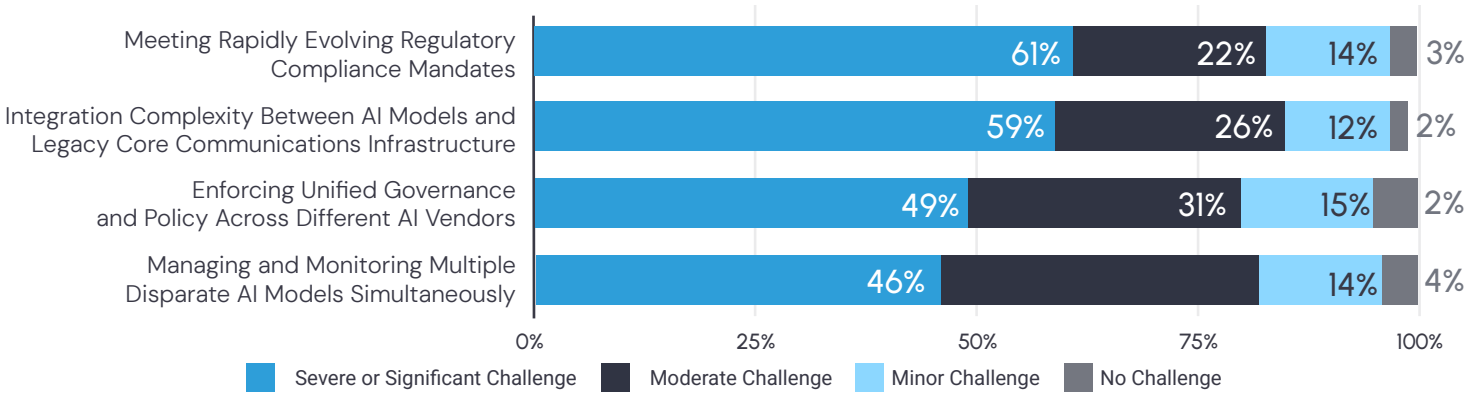
Please rate the level of challenge your organization faces (or expects to face) regarding the following operational elements of AI deployment?

Key Data Points:

61% of operators rate compliance mandates as a severe or significant challenge (with 83% rate it moderate to severe).

59% rate the integration of AI models and LLMs into legacy core communications infrastructure as a severe or significant challenge.

Figure 18. Level of challenges faced across operational elements of AI deployment



HyperFRAME Insights:

Regulatory Compliance as the Leading Operational Bottleneck.

61% of operators rate meeting rapidly evolving regulatory compliance mandates as a severe or significant challenge (83% moderate to severe), making compliance the single largest operational friction point in scaling telco AI.

Legacy Softswitch & Network Integration Bottlenecks.

59% cite integration complexity between AI models and legacy core communications infrastructure as a severe challenge. Integrating dynamic LLMs directly into legacy softswitches without introducing call latency remains a critical architectural hurdle.

Widespread Governance and Multi-Model Friction.

80% of CSPs face moderate to severe hurdles enforcing unified governance policy across vendors, and 82% report moderate to severe difficulty managing multiple AI models at once. Such friction spotlights why CSPs need intelligent orchestration capabilities to provide access to AI experiences without overhauling their infrastructures or call control.

Alianza Crux APIs: Driving the Developer Lifecycle Across Provision, Consume, and Operate

The Alianza Crux developer platform structures its API capabilities across three core lifecycle stages: Provision, Consume, and Operate. This framework enables developers to establish account connections and assign experiences to users, deliver real-time SIP or post-call SIPREC media streams, and manage OAuth2 authentication while maintaining CSP network control.

Question:

How important are the following to your network's future architectural readiness:

- Real-time visibility and analytics across all third-party AI vendors?
- Centralized policy enforcement (security, compliance, cost control) across all AI interactions?
- Dynamic interaction routing (the ability to send a single interaction to different AI providers based on cost, performance, or language)

Key Data Points:

61% of operators cite regulatory compliance as a severe or significant challenge (83% cite it as moderate to severe), making compliance mandates the single largest operational bottleneck in scaling telco AI.

59% of operators report that integrating dynamic AI models and LLMs directly into legacy core infrastructure and softswitches without introducing call latency is a severe architectural obstacle.

North American Fiber Specialist

A key North American dark-fiber provider operates at the physical layer, using minimal external customer-facing AI chatbots, however it mirrors broader industry trends by using internal AI tools (Claude and ChatGPT) to eliminate back-office friction and streamline operational workflows. This pragmatic internal adoption aligns with global data showing that 71% of organizations act as AI front-runners, including fiber specialists supporting the multi-vendor application sprawl (5.18 distinct platforms) and cross-channel continuity challenges (62%) that affect full-stack communication providers. Furthermore, fiber specialists must support strict enterprise guardrails against exposing customer data to public LLMs directly mirror the security concerns of 56% of operators, ensuring its underlying optical infrastructure supports the market's eventual shift toward sovereign, distributed edge-inference architectures.



Appendix: Methodology & Demographics

The survey captures a global perspective from 207 respondents, with key regional representation including the United States (21%), Canada (14%), Mexico (13%), and the United Kingdom (12%).

Looking at decision-making authority, 21% of participants serve in Senior Management, 20% as Directors, Managers, or Team Leads, and 19% in Mid Leadership roles.

All participating organizations (100%) provide network connectivity, mobile services, fixed broadband, or managed network services, followed by media, content, or entertainment services (40%) and software platforms or applications (22%).

In terms of operational involvement, the highest concentration is in procurement, evaluation, or vendor selection for customer-facing connectivity technologies (68%) and network operations, service assurance, or performance management (44%).



Figure 19. Breakdown of respondents by leadership title

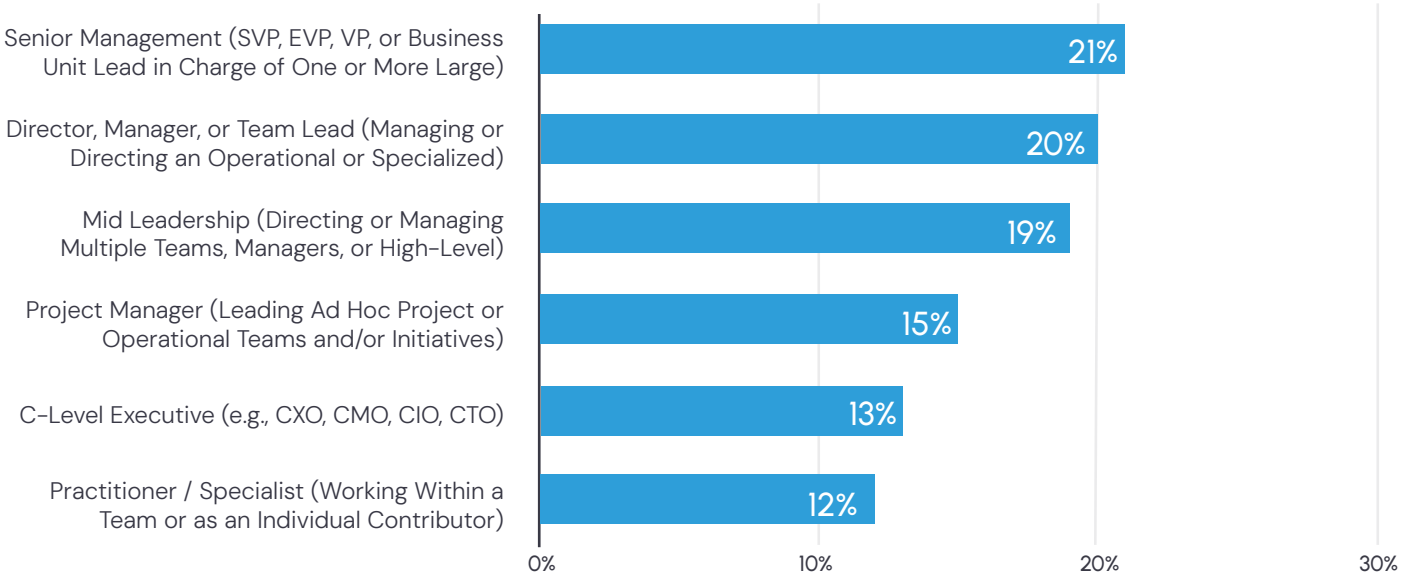


Figure 20. Breakdown of respondents by location

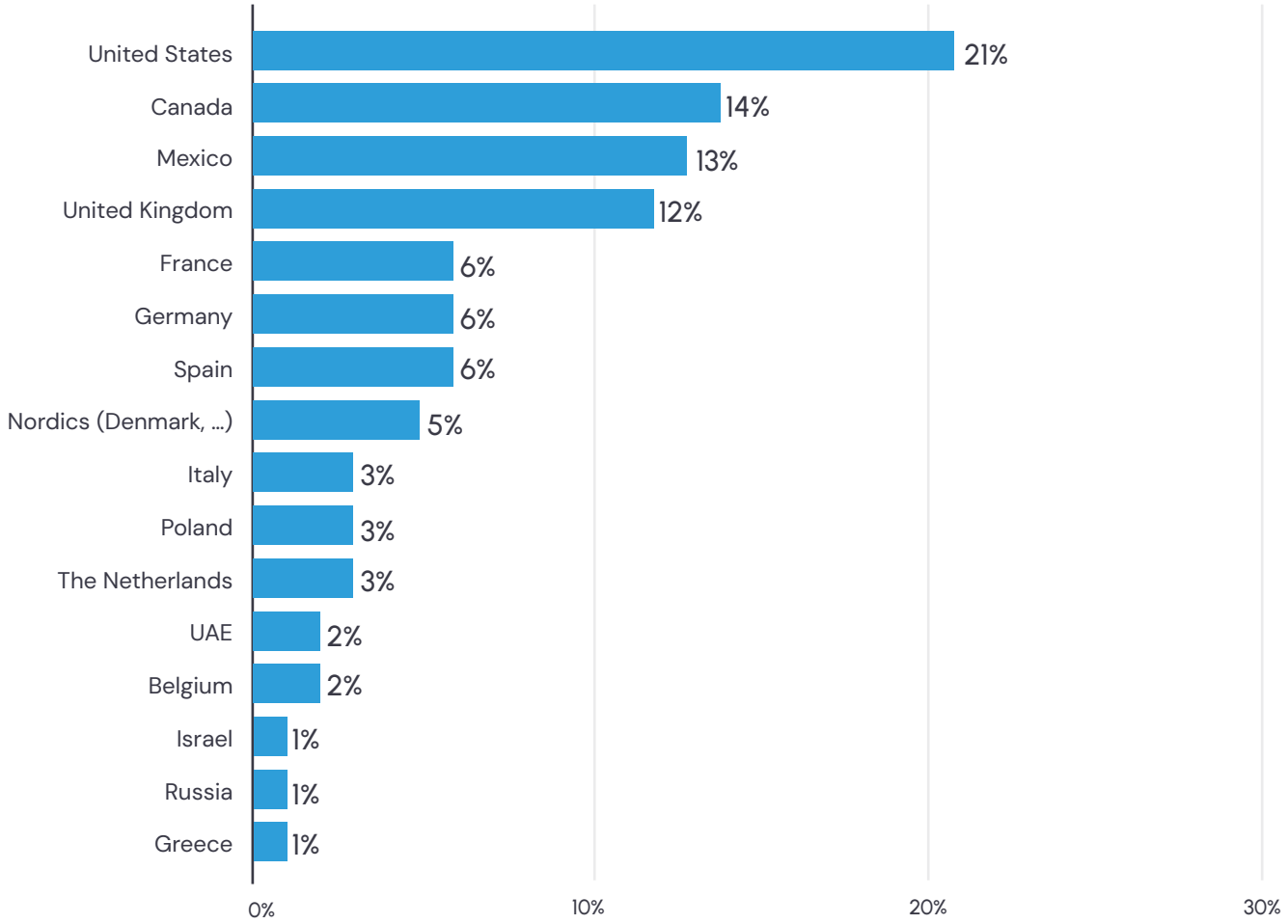


Figure 21. Breakdown by organizations by employee size

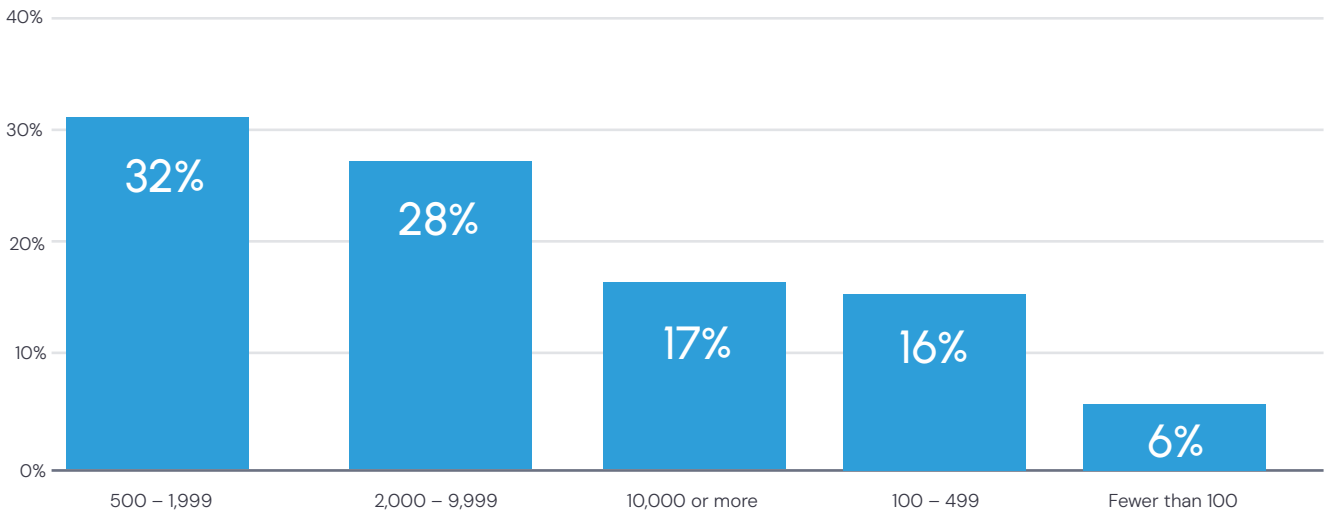
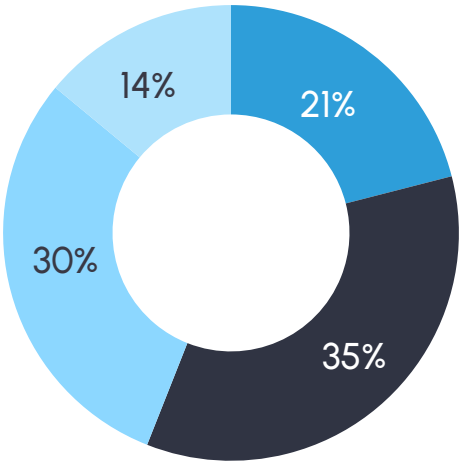
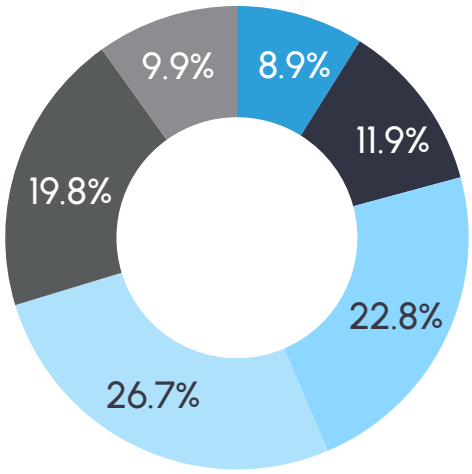


Figure 22. Distribution of organizations by total subscriber baseline



- Public cloud AI processing (e.g., hyperscalers)
- Hybrid Public/Private (roughly equal mix)
- Private cloud (on-prem with external, edge processing)
- Sovereign (on-prem, air-gapped) cloud processing

Figure 23. Breakdown of organizations by annual revenue



- Less than $50 Million
- $50 Million to $249 Million
- $250 Million to $999 Million
- $1 Billion to $4.9 Billion
- $5 Billion to $10 Billion
- Greater than $10 Billion

ALIANZA

About ALIANZA

Alianza is the leading global Intelligent Communications Fabric company, empowering service providers to transform networks and accelerate growth. Our modern architecture unifies infrastructure with orchestration to deliver high-value, AI-infused communication experiences across fixed and mobile communications networks. By bridging legacy systems with modern software-defined technologies, we enable providers to simplify operations, innovate faster, and monetize new opportunities in business and consumer voice — including extensibility with a broad ecosystem of AI developers. Trusted by more than 1,000 service providers in over 80 countries, Alianza's proven reliability, security, and scalability make us the strategic partner of choice for both service providers and developers in the era of Cognitive Communications. For more information, visit www.alianza.com.

HyperFRAME RESEARCH

About US

HyperFRAME Research delivers in depth research and insights across the global technology landscape, spanning everything from hyperscale public cloud to the mainframe and everything in between. We offer strategic advisory services, custom research reports, tailored consulting engagements, digital events, go to market planning, message testing, and lead generation programs.

Our industry analysts specialize in rigorous qualitative and quantitative assessments of technology solutions, business challenges, market forces, and end-user demands across industry sectors. HyperFRAME Research collaborates closely with your Analyst Relations, Product, and Marketing teams to build and amplify your thought leadership, positioning your expertise to enhance brand and product recognition. Through content that engages readers, viewers, and listeners alike, we ensure your voice resonates across channels.

Contact HyperFRAME Research:

Email Address: steven.dickens@hyperframeresearch.com
Telephone Number: +1 845 505 1678