FROST & SULLIVAN

A Sustainable Approach to CPaaS and Communications API Integration

Strategic Considerations for Leveraging Embedded Communications Services

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Executive Summary

Businesses of every size and industry rely on a wide array of technology to enable communication and collaboration among employees, customers, suppliers and partners. Yet, all too often, businesses are compelled to work around the limitations of these tools. Business processes and workflows are sometimes structured around the communications platforms and services' capabilities, rather than focusing on the most productive ways to complete work tasks. In other words, the platforms and services designed to enhance a business' productivity are instead an obstacle to seeing those benefits. As businesses place greater focus on digital transformation, IT staff and software providers will feel increasing pressure to tightly integrate enterprise communications platforms with core business applications to achieve more tangible benefits from communications investments.

Forward-thinking organizations are also acknowledging the value of communications services embedded within their business or consumer applications. In these cases, the embedded communications and collaboration services are simply a feature of the larger application and, are rarely the primary focus of the application. For example, consumer-focused ride-sharing applications require a means for driver and passenger to connect with one another via short messaging service (SMS) or a voice call. Smartphones and mobile apps have raised customer expectations that all functions, including business interactions, can be accomplished in-app.

In 2017, Frost & Sullivan surveyed 1,695 IT decision makers, and found that 81% of respondents have already deployed CPaaS or plan to do so within the next two years. In addition, 67% of respondents plan to increase or maintain their level of investment over the next two years.

However, these levels of integration have been a challenge for much of the deployed on-premises private branch exchange (PBX) or unified communications infrastructure, as well as many general-purpose hosted telephony or unified communications as a service (UCaaS) solutions. For on-premises solutions, exposing application programming interfaces (APIs) beyond the corporate network has been a risky proposition, while many UCaaS and hosted services are too generic, unable to allow the customization through APIs. As a result, a new type of cloud-based communications service—the communications platform as a service (CPaaS)—has come to market.

Frost & Sullivan defines CPaaS as any cloud-based platform that enables developers to programmatically embed voice, video, chat and messaging services within their business or consumer applications. By leveraging APIs, developers and businesses of all sizes can embed on-demand voice, text messaging and video communications within software applications. Similar to other cloud-based services, CPaaS solutions typically operate on a usage-based model, whereby businesses only pay for what they use. For businesses, CPaaS can provide a critical missing element in their communications strategy by compensating for the existing limitations of on-premises infrastructure, as well as offering a bridge to new in-app and software integrations. However, care must be taken when choosing a CPaaS provider. A thorough due diligence must be conducted comprised of the following key tasks:

- a complete consideration of where CPaaS fits into a business' communications strategy
- business needs assessment and justification for API-driven services
- a focused evaluation of the solutions available in the market

Introduction

CPaaS is arguably one of the more disruptive innovations to affect the business communications market. These solutions represent a significant departure from the way businesses of any size have become accustomed to purchasing and deploying communications, and provide a powerful set of tools to make business applications richer and more tightly integrated within business processes and workflows. When leveraged strategically, CPaaS offerings can enhance the customer experience and compliment an organization's existing communications infrastructure and services. However, ad-hoc or haphazard deployments can serve to actually compound a business' communications challenges, rather than mitigate them.

This market insight discusses the value of adding CPaaS solutions to an organization's existing communications infrastructure, as well as identifies many of the considerations that a business should make before investing time, development resources, and money into the "API Economy". In addition, this study proposes important criteria when evaluating and ultimately selecting a CPaaS provider.

The Disruptive Value Proposition of CPaaS

There is a myriad of reasons for businesses to consider incorporating CPaaS into their business communications strategy. First, cloud-based CPaaS is a low-risk way for businesses to consume communications services. CPaaS providers are leveraging the cloud, and its compelling architectural and business model advantages to full effect. Similar to other cloud-based services, most CPaaS solutions offer businesses a compelling operating expense (OpEx) alternative to costly capital expenditures (CapEx) in the appropriate communications and network infrastructure needed to securely support API-driven voice, video, and messaging services. Also important, cloud-based CPaaS offerings are priced at published per-API call or per-minute rates, enabling businesses to pay for the exact amount of services they consume. This is a particularly compelling value proposition for businesses with varying levels of demand or seasonal spikes in business. The inherent scalability of cloud architectures also benefits CPaaS services, enabling businesses to consume as much or as little of a provider's API-directed services as needed by their application or business process.

Beyond flexible consumption pricing, CPaaS allows businesses to utilize communications in a new way. While business PBX and unified communications focus on the value of a tightly integrated set of collaboration tools, CPaaS breaks down voice, video and messaging services down to very simple but useful elements. With CPaaS, an organization only needs to consume the specific communications element or elements they need. For example, a business decides that they want to allow their customers to communicate with their employees using SMS on business numbers. While their existing on-premises UC platform does not support SMS messaging, the business can leverage a CPaaS provider to enable text messaging as an integration or overlay of their existing communications tools. In this example, the business

maintains the existing relationship with their voice providers and their preferred UC vendor, while leveraging a CPaaS to address a gap in customer interactions. Put another way, CPaaS, with its API-driven architecture, affords businesses the opportunity to leverage voice, video, and messaging elements in a very consumable way. Going forward, CPaaS solutions are not likely to replace a business' existing UC infrastructure or services, but rather build on that foundation and make business communications more effective and better integrated into critical workflows.

A Structured Approach to Leveraging CPaaS

On the surface, it may seem counter-intuitive to develop a structured plan to integrate CPaaS into an application or to automate a business processes. Most CPaaS solutions follow the rules of a cloud business model: pay only for what you use, no long-term commitments or contracts, leave or change providers at any time. The reality, however, is that integrating communication elements into an application or an automated business process entails substantial hidden or sunk costs, as well as potential risks. Even with the latest in agile techniques, application development, testing, and certification is an expensive and time-consuming process. Switching between CPaaS providers often presents many of the challenges businesses face when changing carriers, including complex phone number porting and network routing, as well as some unique issues, such as code changes required to support a different set of APIs. Ultimately, in terms of the time, energy, and cost to change, CPaaS solutions are nearly as "sticky" as other telecommunications services. The stickiness is simply less obvious.

Engaging with a CPaaS provider requires a strategic, rather than a tactical approach.

As a result, engaging with a CPaaS provider requires a strategic, rather than a tactical approach. This means that a business should thoughtfully evaluate their short- and long-terms needs for embedded communications as well as develop criteria for evaluating CPaaS providers. Frost & Sullivan has identified several first steps an organization should undertake internally before deploying CPaaS, as well as some selection criteria to evaluate prospective CPaaS partners.

Understand When and Where to Leverage CPaaS

The first step before undertaking any communications project is to fully understand the pain points being addressed, and integrating CPaaS solutions into a broader business communications strategy is no different. While embedding voice, video or messaging elements into consumer or business applications to enable ad-hoc in-app communications is driving the most demand for CPaaS, business process improvements and digital transformation efforts could also factor into the decision to consider API-controlled CPaaS solutions.

CPaaS solutions are very well suited for certain use cases, such as embedding communications features into a mobile app or a connected device, or adding click-to-call on a website or into CRM software. However, in these cases, CPaaS often becomes a tactical response to address single-point issues. Over time, these point solutions can spread

throughout the organization, either virally or as rogue IT projects. Without a strategic direction, a business could find itself supporting multiple CPaaS platforms from multiple providers, missing the opportunity to leverage the economies of scale, shared knowledge and best practices, and other cost and operational benefits of a more consolidated approach.

Ultimately, while CPaaS can often provide a quick and effective fix for a business' communications woes, the costs and management of these services can grow out of control. In order to effectively manage CPaaS, organization need to look beyond the tactical and develop a strategic approach to these solutions. Most organizations have already developed evaluation, procurement and cost allocation processes for business IT and UC resources, and a similar approach should be considered for leveraging CPaaS solutions. Businesses should be proactive, building a strategic framework around their CPaaS usage today, rather than having to stamp out rogue projects in the future.

***Key takeaway**: At a fundamental level, CPaaS solutions exist to solve business process and integration challenges, but businesses must look at CPaaS as a strategic platform. Organizations should thoughtfully consider how to address multiple issues, rather than rely on quick tactical responses.*

Identify Gaps in Existing Communications Services

More than anything, CPaaS is a solution looking for a problem to solve. Most organizations, regardless of size, have gaps or blind spots in how they communicate with each other, with customers, and with their suppliers. While use cases for CPaaS abound—from something as simple as adding the ability to interact with customers via SMS on business numbers, to more complex scenarios whereby CPaaS helps alleviate burdensome manual processes required to log customer calls—it is incumbent on businesses to correctly identify the communications challenges that exist within the organization, and leverage the most effective solution to address them. The nature of CPaaS with its API-driven architecture affords businesses the opportunity to leverage voice, video, and messaging elements in a way that is often beyond the capabilities of their existing communications infrastructure, such as on-premises PBX systems, UC platforms or even UCaaS services.

In that regard, CPaaS builds on the existing foundation to make business communications smoother and better integrated into critical workflows. For example, an organization may have a well-established call center for sales or technical support, but lack a way for customers to connect from the company's website. With a few API calls, a CPaaS can serve as the bridge between the website and contact center, enhancing the value of both in the process. Similarly, enabling "click to call" from cloud-based CRM applications can be a particular challenge for on-premises UC platforms, but is greatly simplified with CPaaS. In another example, text messaging of a user's direct in-dial (DID) number is not supported by most of today's UC platforms or services, but with CPaaS, SMS messaging can be overlaid on top of an organization's existing collaboration tools.

Ultimately, CPaaS provides an additional tool in solving business communications challenges, but should be considered only as part of a holistic communications strategy. CPaaS compliments but does not necessarily replace an organization's existing communications infrastructure and services.

***Key takeaway**: Businesses have to be aware of their own unique communications challenges and apply the right solution to those challenges. CPaaS should be strategically leveraged to augment existing capabilities and/or address challenges that existing infrastructure cannot.*

Evaluate Key Stakeholder Needs

The stakeholders involved in leveraging a CPaaS solution are quite unique from those benefiting from other communications platforms or services. Whereas the end user and the associated user experience represent critical factors, application developers, software vendors, systems integrators (SIs), and the IT support staff all have important input to add to the CPaaS decision-making process. For small and mid-size businesses (SMBs), the selection process might actually be led by the software vendor or SI, rather than the end customer. Conversely, large enterprises, with in-house development teams and large IT organizations, will often work directly with the chosen CPaaS provider. In either case, application developers, those directly involved in building the interface between the application and the service, should have significant influence in the decision-making process. The availability of developer tools, software development kits (SDKs), and support systems are each critically important to the development team's ability to deliver effective solutions with embedded communications.

The next stage in CPaaS evolution is to enable line-of-business users without coding skills to design and consume communications elements within their mission-critical apps. Workflow design tools are web-based tools that allow anyone to create customizable work or call flows using a simple drag-and-drop interface. With these tools, a line-of-business user, rather than IT or a telecommunications expert, could design a multi-tiered flow chart or decision trees to match exactly how their team needs calls or messages to be routed.

***Key takeaway**: Application developers will remain the key stakeholder with respect to CPaaS offerings; however, line-of-business users will play a growing role. Businesses should consult these stakeholders when making CPaaS decisions.*

Assess Current Communication Architecture and Provider Services

The rapid ascent of CPaaS into the enterprise communications marketplace has captured the attention and the imagination of not only developers and business decision makers, but also many established market participants. While much of the press and coverage of the CPaaS market continues to focus on "pure-play" CPaaS providers, the ecosystem is actually much larger, and already includes a number of more traditional telecommunications service providers,

UC platform vendors, UCaaS providers, and video conferencing as a service (VCaaS) providers. Frost & Sullivan anticipates that many more of these vendors and service providers will become active competitors in the "API Economy" over time, offering compelling alternatives to the transaction-based CPaaS providers.

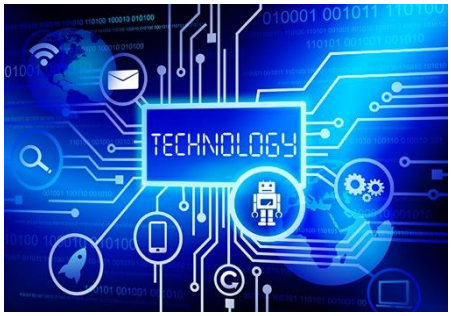
Businesses, particularly those that favor strategic relationships with their current suppliers, should consider engaging with these communications partners as part of an overall evaluation of CPaaS solutions. In some cases, platform vendors or existing service providers might be able to offer similar capabilities to those offered by pure-play providers, while affording their customers discounted rate plans, professional services, and pre-sales support, based on the size and scope of the customer's other services. In addition, some UC platform vendors have begun offering cloud-based CPaaS solutions that leverage an organization's on-premises voice and messaging platforms. This enables customers to take advantage of well-established and trusted UC services in a whole new way.

***Key takeaway**: When evaluating CPaaS options, consider established relationships with existing suppliers and service providers alongside pure-play CPaaS offerings.*

Selecting the Right CPaaS Provider

Feature Set

The biggest value of CPaaS is that it enables businesses to fill gaps in their communications strategy or embed new communications elements in their applications without a significant investment in new infrastructure. To that end, it is incumbent on businesses evaluating CPaaS providers to ensure that the provider's offerings align with the specific features and capabilities they need to address their challenges. In addition, organizations should consider the full scope of a provider's current feature set and future roadmap, to both ensure a level of continuous innovation from their provider, as well as identify additional opportunities to leverage CPaaS elements to address potential/anticipated future challenges or pain points. In other words, businesses should evaluate a provider's feature set not only on today's application requirements, but also on how a long-term relationship with the provider can address the business' future communications strategy and digital transformation efforts.



***Key takeaway:** It is important for businesses to understand their own current needs and future opportunities in order to select a CPaaS provider most closely aligned to those requirements.*

Service Quality and Reliability

Platform reliability and quality of service can vary greatly among CPaaS market participants, based both on customer needs and type of communications elements being leveraged. Many of the CPaaS providers deliver their services over the top (OTT), using the public Internet as primary transport for voice, video, and messaging elements. OTT networks allow lower costs

for CPaaS services, eliminating the typical charges for dedicated access to carrier services, with some tradeoff on quality or reliability as OTT services are often “best effort”.

To serve mission-critical or high-volume requirements, a number of market participants have added enterprise-grade capabilities. Enterprises often have more stringent requirements and an expectation of large-scale deployments. For these customers, enterprise-grade CPaaS providers have built out their own networks to ensure that quality of service can be maintained. Customers have the option to leverage public Internet access for the “last mile” of service, or can opt for a direct interconnect with the CPaaS provider’s network. As such, providers with enterprise-grade capabilities can offer levels of quality of service and reliability comparable to other telecommunications providers, and back it up with service level agreements (SLAs).

It is important to note that unlike more traditional UC and telephony services, the customer’s application is simply directing connections via an API, not necessarily directly processing the media itself. For example, in the case of the ride-sharing application, the app merely tells the CPaaS provider to connect driver and passenger through the public switched telephone network (PSTN), obscuring the Caller ID for both parties. The CPaaS provider bridges the two parties together, reporting the success or failure of the call back to the application. This type of application can be effectively supported OTT at a high level of scale, as the actual calls are not being carried across the public Internet to the customer data center.

Ultimately, the quality and service requirements are highly contingent on the exact needs of the application, where the various communications elements are being carried, and the scale or volume of traffic.

Key takeaway: *Businesses need to understand their application or integration needs, in order to find the best fit in terms of network capabilities and quality of service.*

Developer Support

At the center of any CPaaS deployment are the application developers. Whether they are writing code as part of a business’ internal development team, a software vendor, or a systems integrator, application developers are the ones ultimately tasked to leverage the embedded communications elements that a CPaaS provides in a meaningful way. As such, it is extremely important that developers have access to a strong set of support options, including an online and up-to-date documentation library, direct access to support teams, and a developer forum or community to share best practices, provide support and advice, and recommend changes or enhancements. For larger enterprises, developer support may take on additional capabilities, including presales engineering and evaluations or leveraging a provider’s professional services team in a deployment engagement. Businesses should consider the breadth and depth of a provider’s support organization to ensure that it aligns with the needs and skill set of their application developers.

In addition, businesses should factor a CPaaS provider’s flexibility is in terms of free trials and evaluation periods into their due diligence. Unlike other communications services, CPaaS integration can be a long process of both developing and testing code in test environments

before deploying it in production systems. As such, a provider's willingness to work with developers during these early stages can be a differentiator in the market.

Key takeaway: *CPaaS benefits are more powerful when developers know how to leverage its capabilities. A current and comprehensive documentation library, an active developer community, and flexible trials for prototyping are important considerations when evaluating CPaaS competitors.*

Additional Evaluation Criteria

Beyond the specific capabilities that a particular CPaaS provider can deliver, there are some additional attributes to consider during evaluations. First, the long-term financial viability of a CPaaS provider should be an important consideration. In line with broader telecommunications market trends, the CPaaS market will likely experience a significant number of mergers and acquisitions going forward. Consolidation will be driven by competitors seeking greater scale, market share and growth, as well as traditional telecommunications service providers acquiring CPaaS players to gain quick access to the market.

Also important, an organization should get a clear understanding of the costs and charges of each CPaaS provider. For example, some CPaaS providers charge a per-minute rate, while others bill in per-second increments, which could have a significant impact on monthly costs, depending on the specific application or integration. Similarly, CPaaS providers charge varying recurring fees for phone numbers, toll-free numbers, or specialty services, such as direct connects to MPLS networks.

Finally, organizations should be clear that a prospective provider aligns closely with both their geographical reach and the broader ecosystem. While a number of CPaaS providers offer international numbers or a global network, many are regionally-focused and only allowed to operate as a provider in their home country. Multi-national corporations or those businesses that operate virtually abroad will have to consider CPaaS providers that match their own theaters of operations. Similarly, businesses should factor in the established partners and application integrations of a CPaaS provider, particularly in the growing integration platform as a service (IPaaS) market. Existing partners and integrations can significantly speed up deployment times and ensure compatibility between CPaaS solutions and business applications.

Conclusions

Communications platforms-as-a-service offerings can extend an organization's capabilities to interact with customers, suppliers, partners and employees in new and exciting ways, many of which were not possible using their existing communications infrastructure. Many forward-thinking businesses are foregoing new infrastructure investments and leveraging CPaaS to enable in-app communications, streamline and automate internal business processes, and move forward on their digital transformation journeys. However, care must be taken to understand the benefits of CPaaS, how it can fit into the organization, and ultimately become a strategic asset for better internal and external communications.

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