



# **The Guide to Creating Secure Future-Proof App Experiences:**

Adding powerful real-time communications  
between your users, machines, and IoT

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White Paper

# Introduction

Communication Platform as a Service (CPaaS) is a cloud-based platform that allows developers to add communication functions such as messaging, voice and video to their applications. With CPaaS, there is no need to build back-end infrastructure and interfaces to enable rich communication features between users and IoT.

The growing demand for CPaaS is extending the frontiers of enterprise communications, with organizations of all sizes in almost every industry choosing this solution for messaging, notifications to customers, location-sharing, video chat for customer service, authentication, chat bot, and other services.

Customers and employees expect real-time communications in their mobile applications, and business leaders are looking to CPaaS as a cost-effective, efficient solution. Gartner forecasts end-user spending on CPaaS to reach \$4.63 billion by 2021, while IDC sees CPaaS comprising an \$8 billion market by 2018.

With the number of CPaaS vendors on the rise, choosing the right solution can be difficult. And it is not a decision that any enterprise should take lightly. CPaaS enables today's collaboration culture – which involves the exchange of sensitive corporate information. The right solution needs to be both reliable and secure.

Before we get to the decision-making criteria, however, it is useful to take a closer look at the rise of CPaaS and gain a better understanding of the technology.

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## A disruptive force in the communications market

### You need to keep users constantly engaged

Digital transformation continues to be a leading priority for many CIOs and executives. One key component of going digital is adopting a mobile-first strategy, which enables employees and customers to use services from your provided applications at anytime. Users have started expecting and demanding more versatile capabilities in their mobile apps. At the same time, you want to deliver a reliable, integrated app experience that keeps your users engaged; otherwise, your users will drop off and stop using your services--or switch to other competitive offerings.

### How CPaaS works, and what it can do for your whole organization

Using traditional communications development processes can be costly and time consuming due to the development efforts required to meet infrastructure and interface requirements. Also, it might not allow for multi-tenancy within your business's same domain, which allows you to create multiple applications that share the same set of users and data--can easily integrate into any business process when needed. This gives your users access to multiple apps and services when needed. They have more ways of engaging with your business, each in their own secure, separate environment (for example multiple customers chatting with multiple customer service teams).

Until CPaaS entered the market, many enterprises did not attempt to produce multi-use communications-enabled apps.

CPaaS is a cloud-based platform that allows developers and providers to embed collaboration and communications functionalities such as chat, video, voice, notifications, data sharing and more into their apps. It enables businesses to create powerful new experiences for their users and customers. With CPaaS, organizations of any size can save on infrastructure, human resources, and customer support costs.

By eliminating the need to design, build and maintain complex back-end infrastructure, which significantly reduces costs and development time, CPaaS has revolutionized app development. It enables developers to focus on what they do best: optimizing their apps for their users. It is both a new technology and a new business model for communicating person to person and device to device – opening up exciting new opportunities to power digital transformation.

CPaaS capabilities and sample use cases

Capability	External/Customer Use Cases	Internal/Corporate Use Cases
Voice, video, and text messaging	Multi-channel customer support	Seamless employee collaboration workflows
Notifications	Sales alerts, appointment reminders, shipping notifications	HR notices, meeting reminders
Authentication	Seamless verification upon app login	Two-factor authentication for corporate apps
Data Sharing	Peer-to-peer streaming of files, media, location, and other data	Pass files to individuals or groups via chat for faster department discussions

Who is using CPaaS?

Improved customer-facing communications is one of the main drivers of CPaaS growth, as more and more companies offer services such as appointment reminders, video-enabled help desks and authentication, or data streaming. Other market segments that are increasing demand for CPaaS include:

Web and mobile-based digital businesses

The earliest CPaaS adopters were business-to-consumer start-ups in industries such as transportation (Uber™) and hospitality (Airbnb®) that prioritized fast development, low costs and flexible scaling to provide rich peer-to-peer services.

Security-conscious enterprises

There is growing interest in CPaaS from organizations in an expanding number of verticals such as banking, healthcare, government, law enforcement, retail and finance. Forward-looking organizations are finding ways to leverage CPaaS both internally and externally to their strategic advantage. Whether you are an ER physician who needs quick answers from a surgeon, or a financial professional who needs to consult a high net worth client on a trade, CPaaS can address your organization’s communications needs.

With CPaaS, developers get the tools they need to quickly, easily and cost-efficiently embed cloud-based communications functions into mobile applications to address the business requirements of web and mobile-based digital businesses as well as from traditional enterprises. By reducing the steps to develop powerful apps, businesses can focus on enhancing the user experience with robust, compelling features and optimal functionalities for their apps.

## CPaaS and the enterprise

There are multiple competitive advantages for organizations that integrate business processes with communications. These benefits fall into two broad, interconnected categories that can generally be described as internal and external.

### Employee productivity and engagement

The ability to quickly add real-time chat, voice, video and more to enterprise applications supports the collaboration culture of the contemporary workplace. With reliable, immediate communications built in, there is no need to pause the workflow and jump to third-party communications tools. In addition to streamlining collaboration, features like notification and real-time voice/video can also boost employee engagement.

### Customer/client experience

CPaaS enables new digital business opportunities and enhanced customer service functionality. It can expand and enrich the client/customer experience by enabling features such as automated notifications (e.g. bookings and deliveries), personalized two-way communication (e.g. video chat for customer consultations), peer-to-peer data share (location streaming), or seamless authentication (fingerprint login).

## Current CPaaS market offerings

In every example above, the benefits are worthless if the communications platform cannot safeguard user, customer and corporate data. Consumer-grade CPaaS may offer the functionalities businesses want and need, but they could put enterprise data at risk – potentially compromising the security, competitiveness and reputation of an organization.

Many of the current CPaaS market offerings emerged from SMS service and may have little experience with enterprises in regulated industries that have complex compliance requirements. While some CPaaS providers make it possible to add security to messaging features, they have to partner with third-party security providers to offer this service. This means that developers must work with two companies to add secure messaging to their applications. And even then, they may only protect messages and fail to encrypt large data structures and files, such as media and location.

CPaaS offerings also lack the resiliency needed to handle high bandwidth communications. They are dependent on a carrier network, may be unreliable in certain locations, and fail to protect against network outages--all which mean a disrupted user experience.

Now that we have provided an overview of the current CPaaS landscape, it is time to outline the critical questions enterprises should ask when evaluating a potential CPaaS provider. Then we will look at the two requirements that are non-negotiable: security and resiliency.

## Questions to ask when choosing a CPaaS provider for enterprise

1. Is your provider IP-based with reliable performance? (How do you handle system outages to prevent service disruption? What about unforeseen usage spikes?)
2. Do you provide high-quality communications across the globe, including locations with bad network connectivity?
3. How scalable is your solution?  
(Can you provide rapid scalability when our organization grows? How will you do it?)
4. Does your platform easily integrate into a variety of business processes (How are identity and authentication access controls handled?)
5. What is your global reach?  
(Will your international calling coverage allow me to reach my intended audience now and in the future?)

### Two critical requirements for your organization: Security and Resiliency

Organizations seeking to empower their apps and services with built-in communications cannot afford to compromise on data security, particularly in regulated industries. When it comes to CPaaS, security should not be sacrificed for speed, ease or reduced cost of app development. The security of your business data must be a firm requirement for any communications solution.

Not all CPaaS platforms are equal in terms of their capacity to secure your data. It is vital to understand the differences in security and reliability across different types of communication infrastructure leveraged by CPaaS providers.

By choosing a tested and proven platform where the security components are already embedded, developers can focus their time and effort on building high-quality, user-friendly apps that employees want to use. This avoids the growing problem of creating apps that prioritize functionality over security, which puts critical information at risk.



The next, necessary step in the evolution of CPaaS is **secure resilient CPaaS**. Organizations need enterprise-grade, end-to-end security that satisfies all their compliance and regulatory requirements while providing proven, resilient services.

## Next-generation CPaaS from BlackBerry

The secure BlackBerry® CPaaS solution, BBM® Enterprise SDK, is a ready-made, powerful global IP-based platform that enables you to integrate enterprise-grade communications (messaging, voice, video and data sharing) into your mobile and web applications—without establishing expensive back-end infrastructure and interfaces.

With industry-leading security and rich communications features, BBM Enterprise SDK gives you the simple, ready-made platform you need to develop high-quality apps while keeping data encrypted. It leverages the proven, internet-scale BlackBerry® communications infrastructure, which has been securing real-time communications for customers for over 15 years, protecting more than 100 million users and 1 billion daily messages around the globe.

The BlackBerry CPaaS solution supports multiple use cases in industries where privacy and security matter, including financial services applications for high net worth client communications, multi-practitioner communications in health care and dispatched vehicle location sharing in law enforcement – just to name a few. It also supports other digital industries in which privacy and reliability are crucial to customer adoption.

With complete end-to-end encryption, digitally signed messages, and 100% guaranteed data delivery, BBM Enterprise SDK enables you to build powerful user, machine, and IoT connections around the globe, while keeping everything safe in a “private garden” communication system.

### End-to-end encryption of communications

The BlackBerry CPaaS solution is built on security, with end-to-end encryption across all communications, media, and high-bandwidth data streaming. Unlike other CPaaS offerings that have only focused on features and are now catching up on filling the security gaps, BlackBerry has been grounded in security from the start.

By providing proven security at the platform level, the BlackBerry CPaaS solution helps mitigate the risk of data leakage.

Here's how:

- **Messages are digitally signed**, so you're assured of who sends each message in your application
- **Messages are encrypted**, so you're assured that only the intended recipient can read the message
- **Messages are subjected to integrity signature checks**, so you're assured the message isn't modified in transit



BBM Enterprise SDK meets the rigorous security demands of the most highly regulated organizations, with standards and certifications such as HIPAA business associate; FIPS 140-2 validated cryptographic library; NIST Suite B Cryptography for signing, encrypting and hashing; Digital Signature Standard FIPS 186-4; Secure Hash Standard FIPS 180-4; AES Standard FIPS 197; HMAC Standard FIPS 198-1; and Cryptographic Key Generation NIST SP 800-133.

### **Proven resiliency and scalability**

BBM Enterprise SDK uses its own IP-based infrastructure that has been proven to deliver high-quality communication services for over 15 years across the globe. It is built on the same infrastructure as BBM, which has scaled to 100 million users and billions of messages per day, with the ability to handle high-bandwidth data across all endpoints. Highly resilient, BBM Enterprise SDK ensures your users will always stay connected, even in areas with low network connections. And best of all, communications are safeguarded against traditional network outages and spikes that may compromise the user experience.

How do we offer resiliency?

- Guaranteed delivery with automatic reconciliation of any failed delivery
- Visible message status such as queued, sent, delivered
- Connection management that uses built-in redundancies to ensure uptime

### **Designed for integration into business processes**

The BBM Enterprise SDK works with partners' user identity and management systems, such as Active Directory, to provide an easy, strong authentication and access control model.

You can also integrate the capabilities of the SDK into your existing business processes to provide a better, seamless user experience. For example, you can integrate shared photos and videos into relevant ERP systems or add real-time chat sessions to CRM records. This improves your user and customer satisfaction while lowering your support costs.

## **Rich communications features**

Introduce innovative experiences for both your internal and external users that go beyond basic chat:

### **Chat, voice, video**

Offer a fully-featured instant messaging and calling experiences for your users and with:

- 1:1 and group chats
- Delivery and read status for messages
- Per-chat administration roles controlling who can add and remove participants.
- “Click to call” while the app is running in the background
- Thumbnail or full screen video viewing.

### **Publish/Subscribe services**

Create shared channels that enable you to broadcast to all your users. Users get real-time notifications when there is new activity in the space—whether it be from another users’ activity or from machine-readable information that your application consumes.

### **Chat bots and routing services**

Create chat bot services to provide real-time support for your users. The chatbot can process the users’ data, activity, and messages, and uses this information to then route the user to the correct contact point.

### **Peer-to-peer data streams**

Create rich peer-to-peer sessions in which a variety of high-bandwidth data can be streamed between multiple endpoints. This includes sharing of files, contact cards, media, location, whiteboarding, and other data structures.

### **AI predictive analytics**

Enable behind-the-scene user monitoring with algorithms to push relevant information to users when they need them, such as location-based alerts or suggested user actions based on usual behavior.

## **Game-changer: How the BlackBerry CPaaS solution transformed real-time communications in a regulated industry**

### **The client**

Core Studio Limited, a longtime BlackBerry developer partner, was hired to develop a secure communications solution for a major UK law firm.

### **The legacy solutions**

Their secure email tool had a cumbersome interface, a failure-prone login process, no support for file sharing and problematic downloading.

### **The need**

After shifting to a secure mobile email solution and a cloud-hosted server for file management, collaboration was still an issue. They needed a mobile chat tool that could quickly share files yet also meet regulatory compliance requirements.

### **The solution**

Core Studio Limited used the BBM Enterprise SDK to integrate secure messaging and file sharing into the law firm's existing mobile app, without having to build any additional infra-structure or learn another API – saving time and money.

### **The results**

The client now enjoys secure mobile productivity, with easy communication between the law firm's stakeholders and quick delivery of sensitive case files.

## **Conclusion**

As a growing number of organizations choose CPaaS to increase productivity, lower costs and enable new digital business opportunities, there will be a parallel rise in demand for user privacy and data protection. There are multiple potential use cases for secure CPaaS in regulated sectors like finance, health care and law enforcement. With industry-leading security, the BlackBerry® CPaaS solution, BBM® Enterprise SDK, is a complete development solution for building, scaling and operating enterprise-grade communications functionality such as messaging, voice, video and data sharing into high-performance applications.

Learn more about the BlackBerry CPaaS solution at:

**[www.blackberry.com/bbmesdk](http://www.blackberry.com/bbmesdk)**

BBM® Enterprise SDK supports Android™, iOS, and JavaScript applications.