RapidValue™
Enabling Mobility

How MBaaS is Shaping up the Enterprise Mobility Space

A RapidValue Solutions Whitepaper

Contents

Executive Summary

Backend as a Service is also known as 'BaaS' and sometimes referred to as 'MBaaS'. A popular technology analyst refers to MBaaS as "turn-on infrastructure" for the mobile and the web apps. MBaaS is, basically, a cloud computing category that comprises companies which make it convenient and easy for developers to setup, use and operate a cloud backend for their mobile, tablet and web apps. The BaaS providers offer a lot more turn-key functionality for your mobile strategy than traditional API management and platform as service vendors. MBaaS assists to easily unleash data with mobile-optimized APIs and provides engaging experiences using essential mobile services like push notification and geolocation.

It is essential to ensure that the MBaaS Solution has native SDKs for all the major mobile platforms like iOS, Android, Windows, HTML5 etc. MBaaS should offer cloud-based storage for your application data and accommodate native push notifications in huge numbers. It should allow user management services and user authentication via social accounts like Facebook, Google, Microsoft, and Twitter. A MBaaS solution improves the productivity of the mobile application developers. They focus on developing the core mobile application and do not focus on other trivial matters. Hence, the decision of choosing the right MBaaS solution can decide the success or failure of the enterprise mobility.

This paper explains, theprimary elements of MBaaS, the evolution and key drivers, choosing the right MBaaS platform, the right approaches to MBaaS pricing, synergy of MBaaS and PaaS and the typical use case on how MBaaS accelerated enterprise mobile application, with a case study. It also addresses the future of MBaaS and key partnerships.

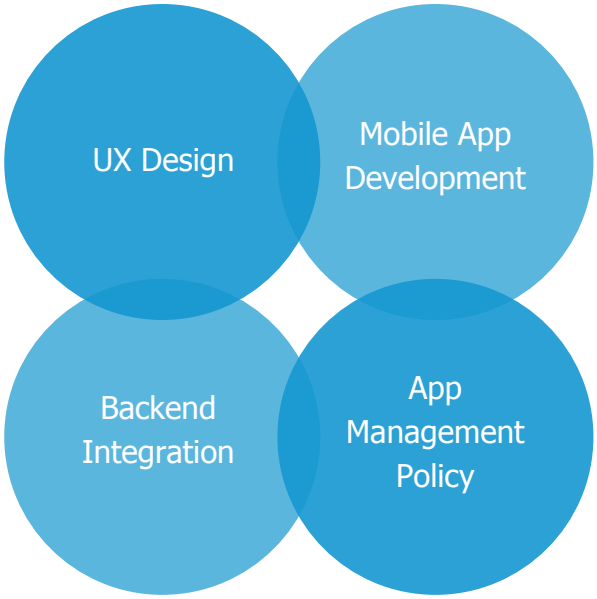
What is Mobile Backend as a Service (MBaaS)?

Ever thought why Mobile Development time lines are lengthy and hardly met ?

In order to improve the features and facilities of the mobile services, it is important to work on the use of the context while delivering the right mobile experience. The business has to predict what the customers desire before they launch a mobile application. In a world where the usage of smartphones is rising exponentially, the company has ample opportunities to make a name for itself. Apart from the huge amount of profit, that is being made, you can, actually, turn the application idea into a reality.

Challenges for Developers

- Large effort spent on backend integration
- Unable to focus on application development & design
- Stuck with existing development tools, used in the company
- Lot of development tools for each component, but not a single tool for all the components



Typical Elements of Mobile Application Development

Backend Requirements are Turning Complex and Time Consuming

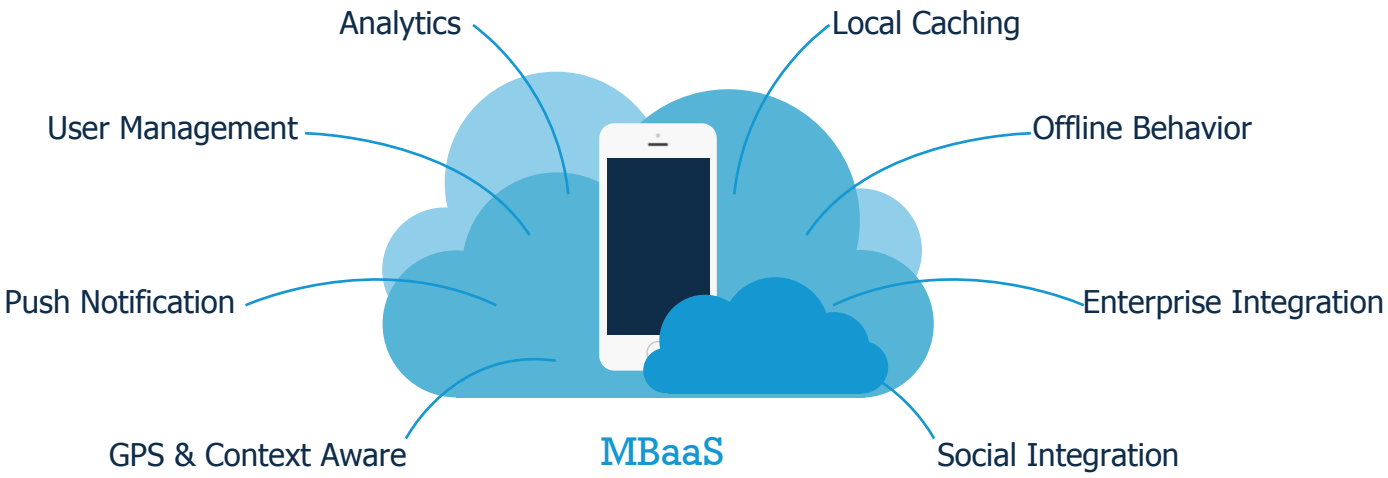
The challenges in mobile application development is generally because of the complex nature of the mobile ecosystem. Creating mobile applications, that are well designed and work efficiently, can be a complex task and a time consuming process. Meticulous planning and proper execution of a well-defined mobile application strategy can lead to significant gains for your business.

The customer needs to locate each and every field technician on the map. View and start the video chat to connect with them.

Up to 80% of the implementation effort is dedicated to backend development.

Leverage the Power of MBaaS

MBaaS is supposed to be a server side technology to power the mobile applications. There is an increase in the demand for mobile application development and 'Mobile Backend as a Service' (MBaaS) ensures the speeding up of the mobile application development and deployment. This is cost-effective too.



MBaaS – What, Why, When and How?

Mobile Backend as a Service, also known as 'MBaaS', is an efficient computing architecture that connects mobile applications to cloud computing services. These platforms help you to reduce the time that is required to build the mobile applications. MBaaS allows the developers to focus on complex and core features instead of the low-level tasks. MBaaS platforms are also preferred over Mobile Enterprise Application Platforms (MEAPs).

What	• Provides mobile application developers a way to connect their application to backend cloud storage and processing
Why	• Abstract away complexities of launching and managing own infrastructure • Focus more on front-end development instead of backend functions
When	• Multiple Apps, Multiple Backends, Multiple Developers • Multiple Mobile Platforms, Multiple Integration, Multiple 3rd Party Systems & Tools
How	• Meaningful resources for app development acceleration – 3rd party API, Device SDK's, Enterprise Connectors, Social integration, Cloud storage

Primary Building Blocks of MBaaS

Blueprint of MBaaS Components

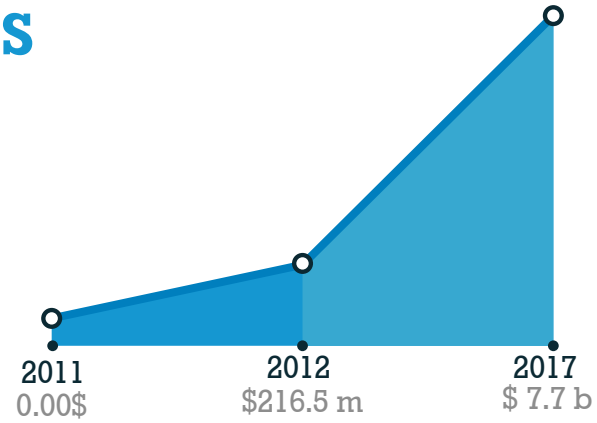
MBaaS offers cloud-based suite of the mobile backend components which includes data storage, geolocation for the delivery of location based services, analytics for insight into the user preferences and application use, access control, push notifications for alerting mobile users, social media integration with Facebook, Twitter and other platforms, user management that maintains user profiles and settings and many more.

Enterprise Connectors – Oracle, SAP, MS	Image - Instagram, Flickr	Geolocation	Mobile specific SDK – Android, iOS, Windows Phone
Social Media – Facebook, Twitter	API – Custom, Query, REST-ful	Caching & Offline Working	Custom Code and Objects
Promotional Tools	User Management	Communication Services - Chat, Email, Push notification etc.	Cloud Storage

Evolution and Drivers of MBaaS

MBaaS – Nascent to Potential Platform

MBaaS have been gaining prominence with each passing day. Big acquisitions and huge investments signal potential growth of MBaaS for the purpose of accelerating mobile application development, in the near future.



2011

MBaaS concept launched, and companies and vendors started sprouting

2012

Gained quick traction due to several drivers necessitating MBaaS for accelerating mobile application development

2017

Huge leap in the market expected for MBaaS. This is signaled by strong acquisitions and VC investments in MBaaS platforms

MBaaS – Nascent to Potential Platform

With the creation of MBaaS in the market, the world has now changed for the better, for developers. MBaaS has been created to facilitate the following: enterprise integration, push notifications, user management, mobile ads, social media, offline data synchronization, data storage, GPS, analytics, and much more. It is now easy to decipher why the developers are engrossed in backend development.

Skills	Quality	Time and Cost	Enterprise Scale
Shortage of mobile developer skills to develop complex backend integration	High demand for high quality mobile applications, across device platforms	Reduce mobile app development timeframes. Re-focus backend integration efforts to front-end development	Demand for enterprise scale mobile application with backend integration

Business Benefit Drivers of MBaaS

Mobile backend-as-a-service (MBaaS) is, actually, not a very new concept. But the technology is gaining prominence with each passing day and have come to the forefront. Enterprise developers have been tackling mobile application projects and facing backend integration complexities. There is no doubt about the fact that MBaaS should be considered to be an option to investigate when you have decided to embark on a brand new project with regards to mobile application development. Some of the business benefits of MBaaS are:

- Faster development cycle – since backend infrastructure and integration layers are pre-built, it reduces the development effort and developer can concentrate more on mobile front-end. This reduces time considerably.

- Better app performance – Backend codes from MBaaS service providers have gone through rigorous testing and optimization for better performance and stay alive in competition. This inturn improves application performance.

- Lower TCO – reduced expense in app development due to reduced time of development. Development cost will be spread over the users.

- Higher reliability and scalability – due to cloud storage which is guaranteed by infrastructure providers like AWS, HP cloud etc.

- Enhanced customer satisfaction – due to better quality, quicker deployment, better app performance and reduced TCO.

- More margins and profit – due to less loss of business, due to app downtime, lower TCO.

Use Case: MBaaS Driving Enterprise Mobile Application Development

Developing a Field Service Enterprise-Scale Mobile Application

The Enterprise Business Applications for field service helps in providing the field service workers and technicians full accessibility to the information with regards to back-office systems in any kind of environment i.e. both offline and online. It helps to boost productivity and ensures customer satisfaction by providing the field engineers quick access to the right resource and exact information. The technicians can easily get access to service-relevant information anytime and anywhere – from their mobile device.

We want to develop a mobile application for our field service technician who goes to repair and service our products at the customer's premise.

Service Manager

- Enterprise Integration with Oracle Apps ERP
- Technicians has both iPhone and Android phone
- We need support for Offline Usage and Sync
- Push notification is essential for alerting new tasks
- Geolocation is important to see where the technicians are for work scheduling
- Chat and Video conferencing are value added features that increase productivity

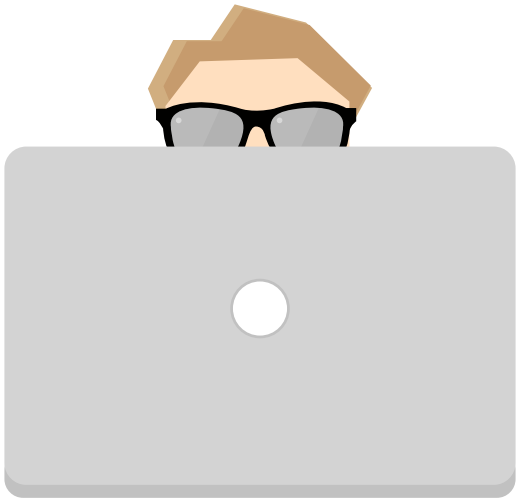
To Custom Develop all the Backend Integration is Cumbersome

Enterprise integration can be quite complex. To explain it more clearly, enterprise integration has to deal with multiple applications which are running on multiple platforms in various locations. Hence, the term 'simple integration' is pretty much an oxymoron, nowadays. The real challenges of integration lie across business and technical issues.

How can I implement an end-to-end user management in limited time

To include offline behavior and cache services, it needs at least 500 lines of code in Android

Not sure how I am going to complete chat and geolocation services in a limited time span

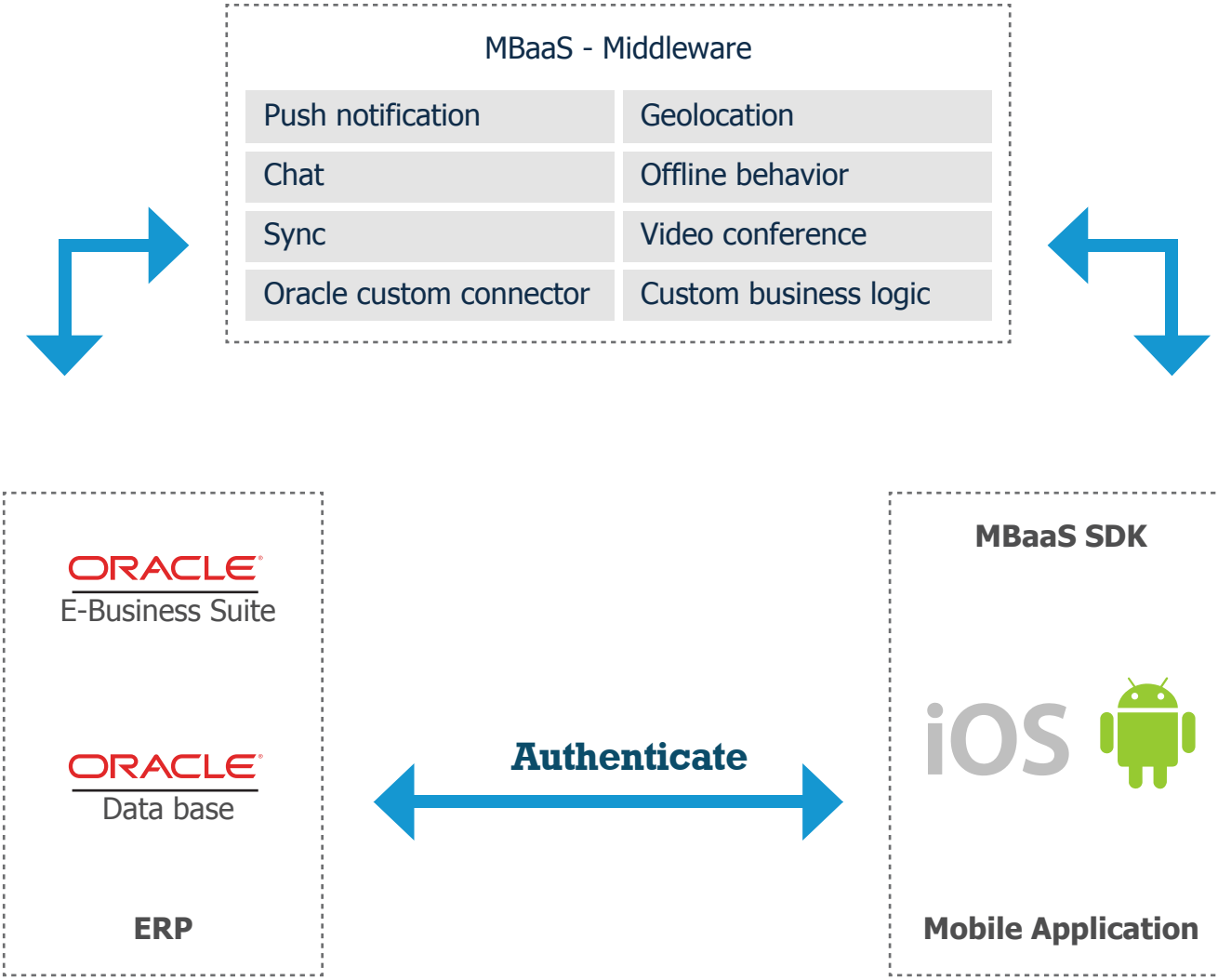


Mobile Developer

Manage the Complex Backend Functions using MBaaS !

MBaaS services provide a cloud-based storage facility for your data and an automatic API generation is also done, providing read/write access to that data. MBaaS provides user management facilities for authenticating the access to your data. You are aware of a set of analytics that allow you to determine how the users are using the particular mobile application.

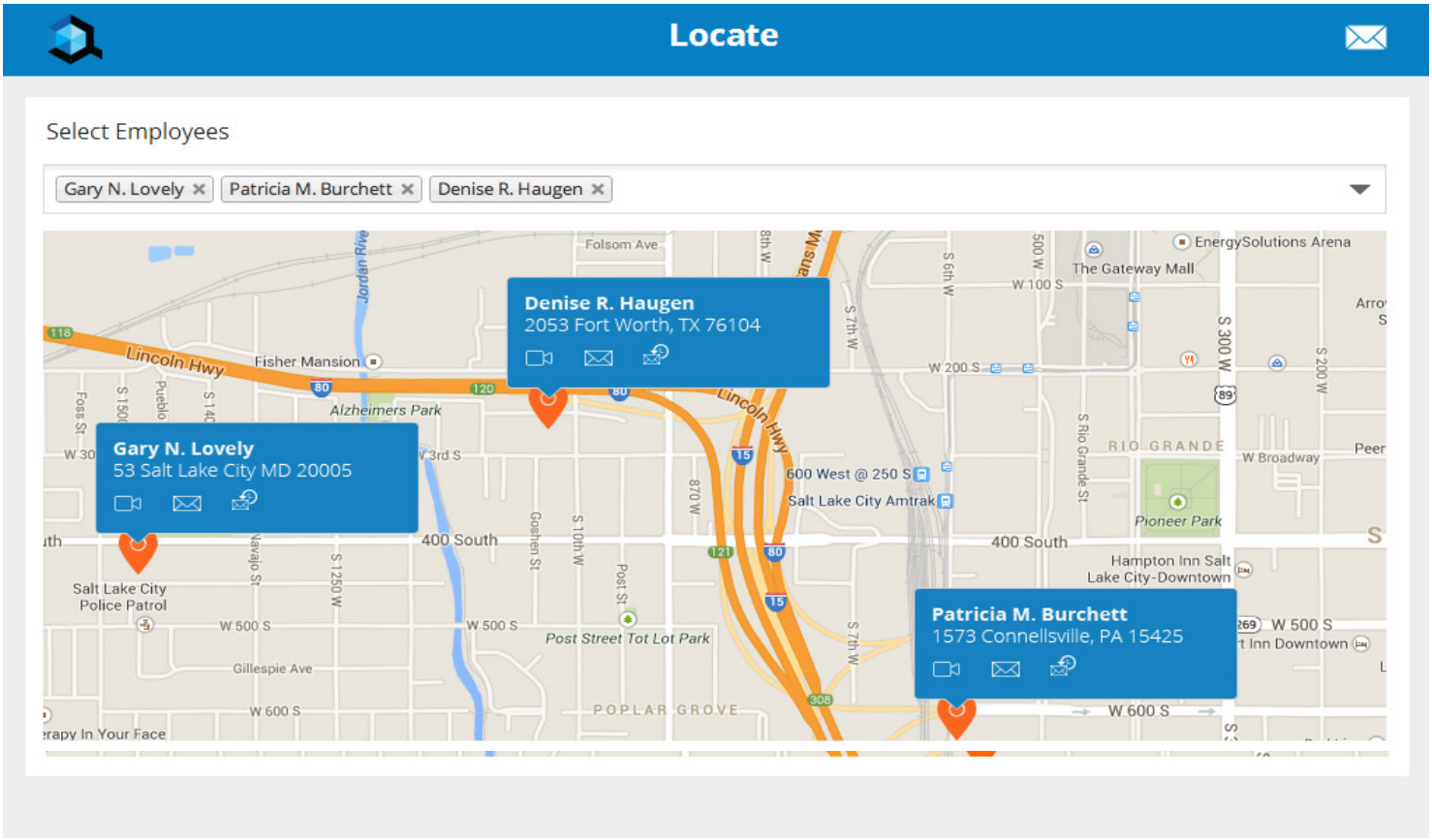
Architecture for MBaaS integration



Use Case – Leveraging Geolocation Services

One of the important feature of MBaaS is that it leverages geolocation services and hence, it is easy to locate the field service technicians on the Google map.

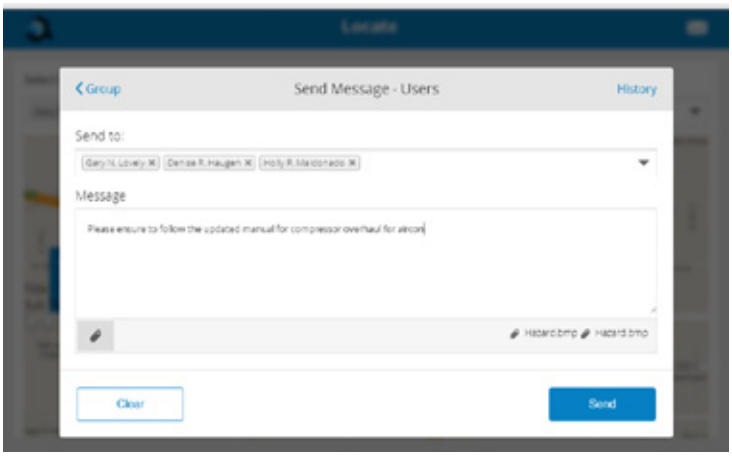
“ Leveraging Geolocation Services: Viewing the technicians on Google Maps ”



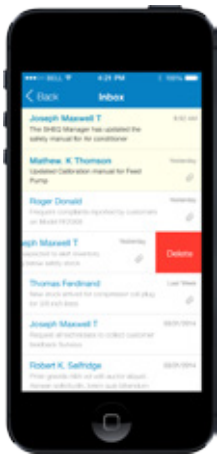
Use Case – Chat and Messaging Services

The implementation of the chat and messaging services can be done easily. Real-time messages can be send to the technicians on their mobile devices.

> “Implementing Chat and Messaging Services
> Send real-time messages to technicians on mobile”



Backend

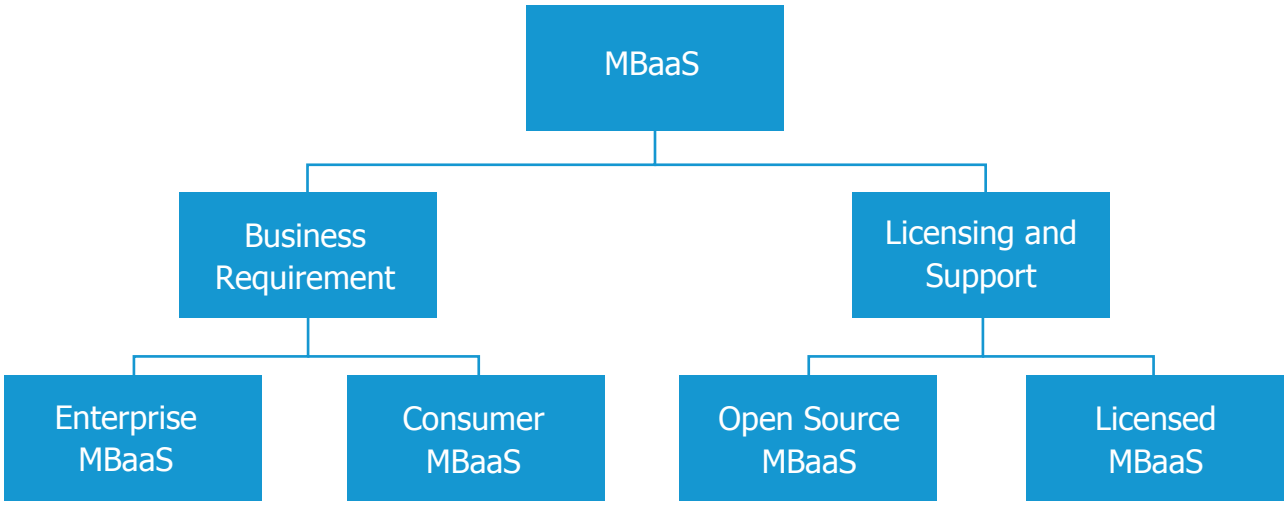


Mobile App

Choosing the Right MBaaS Platform

MBaaS can be Grouped into Different Kinds

MBaaS can be categorized under different groups. One is as per the business requirement and the other is 'Licensing and Support'. As per business requirement, MBaaS can be either Enterprise MBaaS or Consumer MBaaS. When it comes to 'Licensing and Support', there is 'Open Source MBaaS' and 'Licensed MBaas'.



Some of the MBaaS Providers

Licensed MBaaS

anypresence

StackMob
Powering Mobile Applications

cloudmine

kinvey

Parse
The Cloud Application Platform

APIOMAT
Enterprise

kumulos™

appcelerator

Kii

Open Source MBaaS

OPENMOBSTER

StrongLoop

BAASBOX
OPEN SOURCE BACKEND AS A SERVICE

OpenKit

There is No Single Service Provider which Fits all Size

You can choose a MBaaS going by the concept of "Mix and Match". MBaaS is generally chosen as per the need and requirement. There are certain common features which are popular and you can also consider several specialized features that are offered. It all depends on the requirement.

Common features to consider	Specialized features to consider
• User management APIs. • Push notification. • Social network Integrations. • Geolocation services. • File management.	• Support for device platforms – Android, iOS, Windows Phone etc. • Support for different authentication mechanisms for enterprise and consumer apps. • Mobile app performance data and analytics. • Support Custom Business Logic. • Data storage mechanisms like Schema less storage or relational data support or special storage mechanisms for geo spatial data, photo etc. • Data analysis' capability on various areas for evaluating user activities.

- User Management APIs – It saves time in developing user logins, signing up new users, email verification, password reset etc.
- Support for different authentication mechanisms – If consumer apps, consider the support for providing Facebook / Twitter or Google login. Enterprise app should have support for various logins by accessing database directories.
- Mobile app performance data – Helps the developers for performance tuning. Check for the analytics and dashboard.
- Data storage considerations – Schema storage is better when the number of attributes vary. Relational data support is essential for enterprise apps when more structured data and relations between tables are to be defined.
- Data analysis capability for evaluating user activity - This is for checking the responsiveness to a push campaign, responses by user categories etc.

Approaches to MBaaS Pricing

MBaaS Pricing: Flexible Options

The pricing options with regard to MBaaS is quite flexible. It depends on a number of factors which include number of API calls, type and size of storage, number of applications build, pricing as per support and maintenance, feature based pricing, number of API calls, fee for analytics and many other factors. Also the MBaaS is hosted on a cloud platform like amazon web service (AWS) and the hosting fee of AWS will also reflect on the pricing.

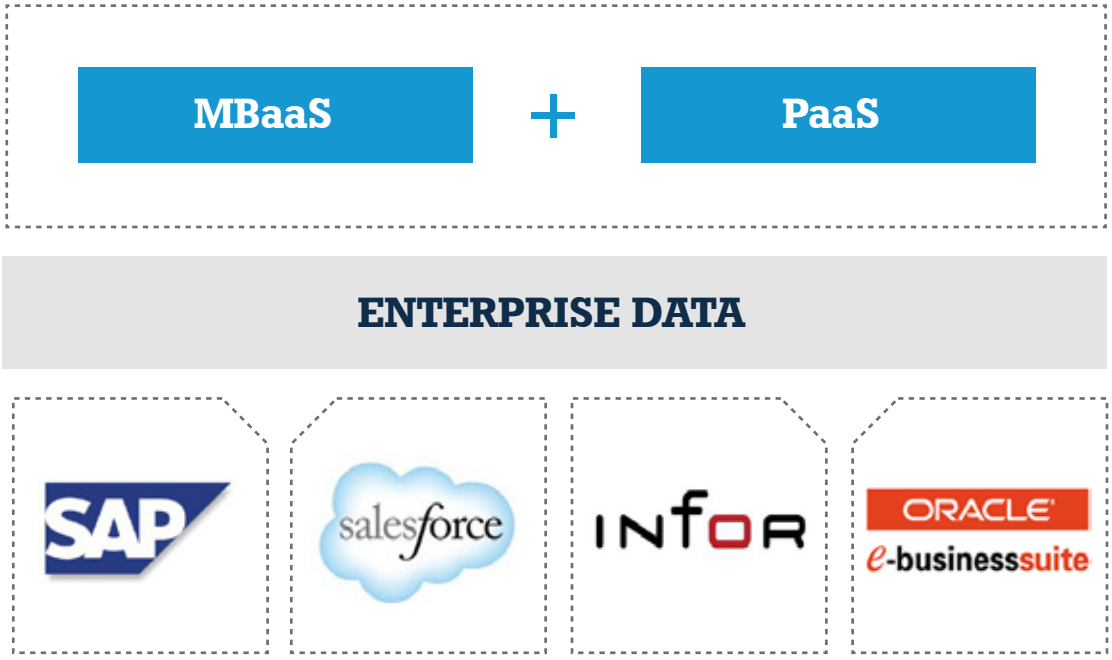
- Number of API Calls
- Type and Size of Storage
- Active User Pricing
- Number of Applications Build
- Premium fee for Analytics
- Feature based Pricing – Push notification, Chat, Email, Sync, Offline etc.
- Support and Maintenance Pricing

Synergy Between MBaaS and PaaS

Ask these questions - Go the extra mile!

Is MBaaS the end? Can we make MBaaS platform more robust? These are some questions which need to be answered on a priority basis. Web and mobile applications require the same set of features in the backend. The features include push notifications, integration with social networks, and cloud storage. MBaaS providers act as a bridge between the front-end of an application and many cloud-based backends through a unified API and SDK.

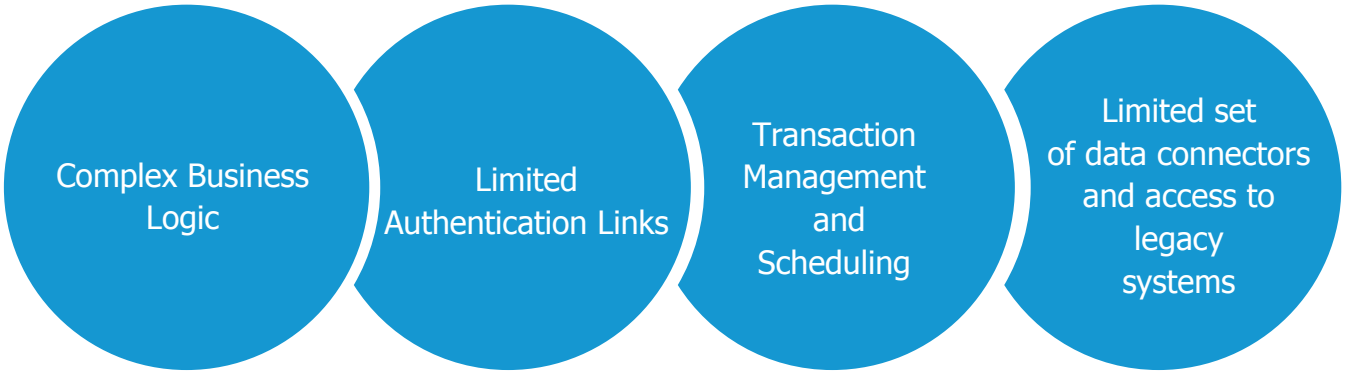
> “When it comes to Enterprise Systems and Data, it requires a complete platform to address the complex challenges”



The enterprise mobile applications often need to connect to on premise enterprise systems like Oracle or SAP or Salesforce CRM. The challenges are also many. The business logic to be handled by the application will be more complex and the number of asynchronous API calls will be large. Also the enterprise systems require more rigorous authentication mechanism and identity management. When it comes to writing business logic the developers sometimes gets restricted by the "single language" support of BaaS. In such cases, a more robust scalable and flexible design can be adopted by proper collaboration of BaaS and PaaS.

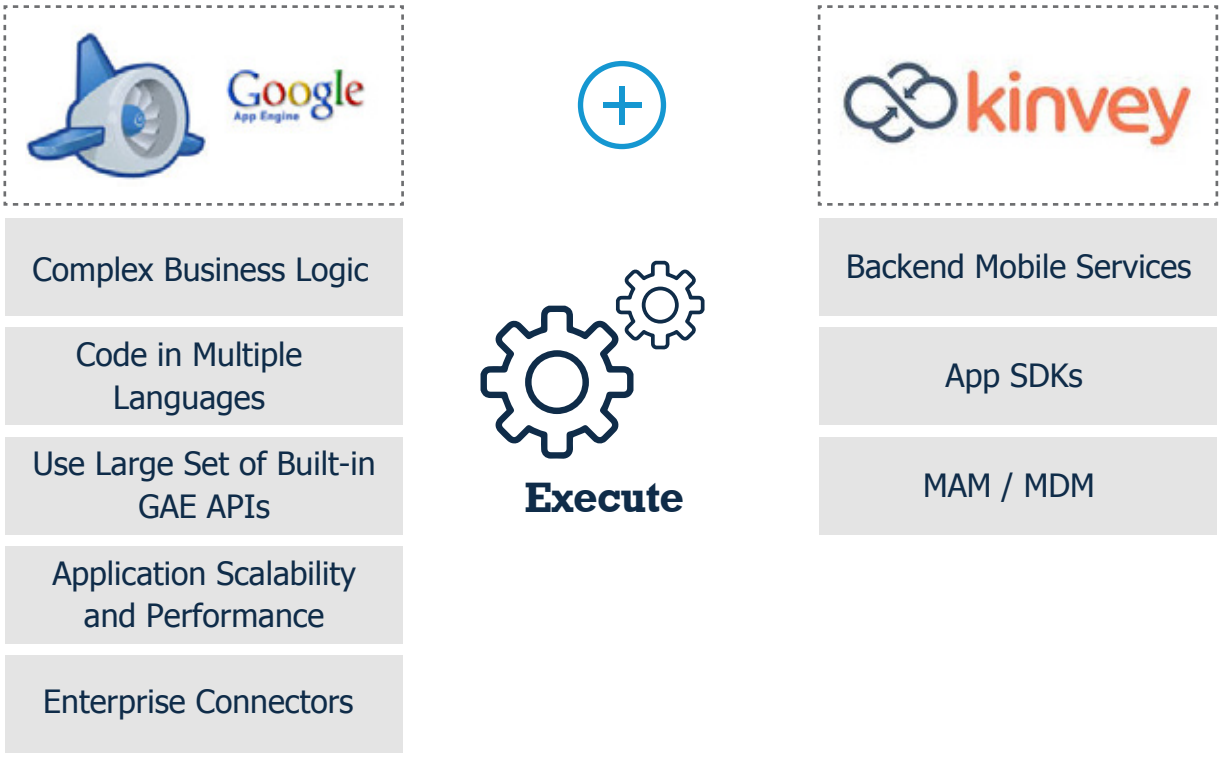
Why MBaaS Falls Short when Addressing the Enterprise Application Development

It is not easy to address the Enterprise application development. It is quite an arduous assignment when some of the factors are taken into consideration. There are certain features which make the development process a little complicated. The complex business logic and limited authorization links are two factors which create a little difficulty. Transaction management and Scheduling may also act as obstacles in the way of developing the application. Limited set of data connectors and the access to legacy systems, sometimes, make it tough for MBaaS to address Enterprise application development in an effective manner.



Understand the Synergy with Great Partnership

MBaaS providers portray a lot of potential in providing the developers with a quick access to API resources.



Future of MBaaS and the Key Trends

Major Acquisitions and Hand Shakes

Conclusion

The aim of Enterprise mobility solutions is connecting the employees, the customers and the partners together and providing them with the information that they require on-the-go. This calls for the revelation of the company's data from the business systems, which perhaps, were not designed for the mobile era, initially. Unleashing this data to the mobile devices is an essential and crucial task. This involves a lot of integration which can be quite complex in nature. Companies have to maintain high levels of security and also, control, in order to ensure that the sensitive data and systems' policies and privacy are not breached. In order to simplify this task for the developers, Mobile Backend-as-a-Service (MBaaS) came into existence.

MBaaS is, basically, a cloud computing category that make it convenient and easy for developers to setup, use and operate a cloud backend for their mobile, tablet and web apps. The MBaaS providers offer a lot more turn-key functionality for your mobile strategy than traditional API management and platform as service providers. With the creation of MBaaS in the market, the world has now changed for the better for the developers. MBaaS has been created to facilitate the following: Enterprise Integration, Push Notifications, User Management, Mobile Ads, Social Media, Offline Data Synchronization, Data Storage, GPS, Analytics, and many more.

If you'd like more information on this topic, please do write to the authors, Abhijit Ramachandran, Sr. Consultant - Enterprise Mobility at abhijitrc@rapidvaluesolutions.com and Ajish Cherian, Technical Architect at ajish.cherian@rapidvaluesolutions.com

RapidValue has a team of domain experts and mobility consultants to help you build innovative and comprehensive mobile applications for your enterprise. If you need guidance on building your first mobile application, please write to contactus@rapidvaluesolutions.com, we'll be happy to hear from you.

About RapidValue

RapidValue is a leading provider of end-to-end mobility solutions to enterprises worldwide. Armed with a large team of experts in mobility consulting and application development, along with experi - ence delivering global mobility projects, we offer a range of mobility services across industry verticals. RapidValue delivers its services to the world's top brands and Fortune 1000 companies, and has offices in the United States and India.

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