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The New Enterprise Mobile Middleware

Mobile Backend-as-a-Service: The Agile Development Path for Mobile Apps

INTRODUCTION

Mobile development in the enterprise is far from an easy endeavor. Development teams face an increasingly complex fabric of different devices, mobile operating systems, on-premise apps, SaaS apps, carriers and deployment models. Trying to support all of the likely permutations in mobile apps is a difficult, time-consuming, error-prone job.

While most organizations can effectively provide solutions for the line-of-business APIs, they typically have to deploy sizable resources for enabling enterprise systems, data access, infrastructure and mobilefirst APIs. When you analyze where most of that time and effort is spent, the answer is astonishing: backend infrastructure.

Providing these types of APIs in a supported and scalable model is the role of enterprise mBaaS platforms, which offer diverse server-side functionality for enabling backend capabilities to enterprise mobile apps via mobile APIs. By aggregating APIs and making them available in a consistent, robust layer, mBaaS platforms can boost developer productivity.

Enterprise vs. Consumer Mobile Backend as a Service

Mobile backend-as-a-service (mBaaS) has emerged as one of the hottest trends in today's technology market. While most mBaaS technologies have been adopted in the consumer or B2C space, these platforms are starting to make serious inroads in the enterprise. In order to win in the enterprise, mBaaS platforms must provide very tangible solutions to the well-known challenges of enterprise mobility.

"In order to the win the enterprise, mBaaS platforms must provide very tangible solutions to the well-known challenges of enterprise mobility."

When analyzing the characteristics of enterprise and consumer mobile applications, we can find marked differences between the backend requirements of both paradigms. While consumer mobile apps typically leverage social network profiles and public data sources, enterprise mobile solutions normally require incorporation of backend capabilities residing in corporate systems including authentication, identity federation, logging, storage and messaging.

In order for mBaaS technologies to be adopted in the enterprise, they need to provide efficient mechanisms to broker the communication between mobile applications and line-of-business systems, whether hosted on-premise or SaaS-based. Mobile backend-as-a-service technologies have the opportunity of creating a new generation of middleware technologies that lay the foundation for the mobile first enterprise.

mBaaS as a Mobile-First Middleware

Almost every game-changing enterprise software trend over the past few decades have been accompanied by a new type of middleware technology to address the integration needs of different systems. The B2B technology revolution of the 1990s produced the traditional Enterprise Application Integration (EAI) platforms focused on B2B standards such as EDI or Rosetta Net. That movement was followed by the evolution of the Service Oriented Architecture (SOA) ecosystem, which brought together the infamous Enterprise Service Bus (ESB) as the fundamental type of middleware. This was quickly followed by Integration Platform-as-a-Service (iPaaS) trends, which emerged as the essential mechanism to implement cloud-cloud, or cloud-on-premise integration solutions.

Like most novel enterprise software technologies, the mobility movement introduces new integration challenges that require a specialized type of middleware. mBaaS technologies are a natural platform for enabling integration models between mobile devices and enterprise systems. To get to that level, mBaaS solutions should embrace traditional and emerging mobile enterprise integration patterns and simplify the experience for developers to incorporate those integration blocks into enterprise mobile apps.

B2B	→	RELATIONAL DATABASES	→	SERVICE ORIENTED ARCHITECTURE	→	CLOUD COMPUTING	→	MOBILE

Integration Trend:
B2B Gateways

Integration Trend:
Extract, Transform & Load

Integration Trend:
Enterprise Service Bus

Integration Trend:
Integration Platform-as-a-Service

Integration Trend:
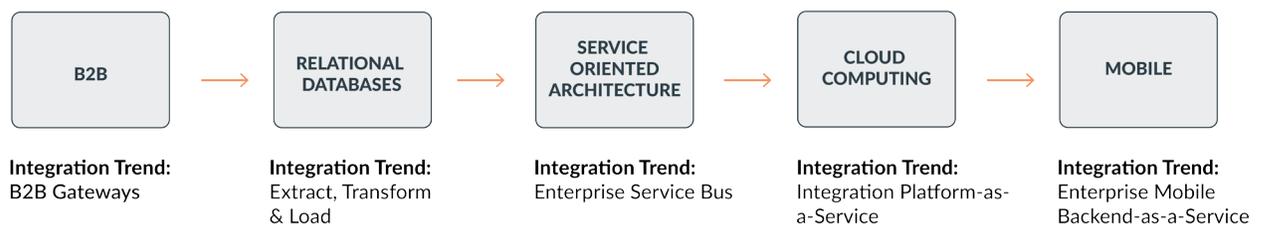Enterprise Mobile Backend-as-a-Service

Fig. A - Over the last 40 years, every transformational enterprise software movement has been closely associated with a new form of integration and middleware technology.

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The Main Challenge of Enterprise Mobile Apps: Inegration

When analyzing the roadblocks encountered by organizations building enterprise mobile solutions, the integration between mobile apps and line-of-business systems such as SharePoint, CRM, ERP and databases stands as the biggest challenge to enable a mobile enterprise infrastructure. Some of the most common challenges that organizations face when trying to build mobile applications that integrate with corporate systems include:

"...mBaaS platforms should provide the APIs, libraries and management capabilities that allow mobile developers to accomplish that task in a seamless manner."

- The complexity of the client libraries of most business applications

- The security implications of enabling mobile consumers to interact with business data

- The significant learning curve that most mobile developers need to overcome in order to understand line-of-business systems

To address these challenges, enterprise mBaaS platforms must provide a consistent and drastically simple model that allows developers to seamlessly integrate with line-of-business systems when building enterprise mobile applications. Whether integrating with a SaaS system like Salesforce.com or an on-premise application like SAP, mBaaS platforms should provide the APIs, libraries and management capabilities that allow mobile developers to accomplish that task in a seamless manner and focus on delivering a great mobile user experience instead of writing infrastructure code.

Mobilizing Business Data

"... enterprise mBaaS platforms are in a unique position to provide a robust mechanism that allows enterprises to expose corporate data sources to mobile consumers..."

Consuming business data from mobile devices in a secure and private way is, arguably, one of the top priorities of enterprise mobile infrastructures. From an enterprise perspective, exposing business data to mobile consumers not only introduces security concerns but it requires line-of-business systems to be optimized to support mobile consumers. While the enterprise mobile ecosystem has produced very effective technologies for securely sharing files and documents to enterprise connected devices, we are still in the early stages of finding similar solutions that work for enterprise data sources.

Given its capability of integrating with diverse line-of-business systems, enterprise mBaaS platforms are in a unique position to provide a robust mechanism that allows enterprises to expose corporate data sources to mobile consumers—via mobile data virtualization—a natural next-step in the evolution of enterprise mBaaS technologies. To accomplish this, enterprise mBaaS platforms need to not only expand its line-of-business integration capabilities but also provide a secure and compliance-ready infrastructure that allows organizations to seamlessly expose data resident in corporate systems to enterprise mobile consumers.

Fighting the Homegrown Mobile Middleware

Every enterprise mobile solution requires backend capabilities — whether in the form of horizontal infrastructure capabilities, such as storage and identity or integration with corporate systems.

Because of the complexity of first-generation mobile enterprise application platforms (MEAPs), many organizations have invested in building custom middleware infrastructure, typically in the form of web services that can be used from enterprise mobile applications. This investment in homegrown infrastructure can cause organizations to erroneously ignore innovative mobile middleware technologies that can provide very tangible benefits to their enterprise mobile apps.

In order to overcome those challenges, enterprise mBaaS platforms should provide clear return on investment (ROI) criteria compared to homegrown mobile backend infrastructures. This ROI typically comes in the form of feature-richness that can quickly solve some of the well-known challenges of enterprise mobile solutions. As simple as this sounds, justifying the "Buy vs. Build" argument is one of the biggest roadblocks of adopting mBaaS platforms in the enterprise.

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Public, Private and Hybrid mBaaS

The adoption of cloud technologies continues to face challenges in the enterprise in areas such as data privacy, compliance, etc. Some of these challenges have now become major roadblocks to the adoption of mBaaS platforms in the enterprise.

"... enterprise mBaaS platforms should provide clear return on investment (ROI) criteria compared to homegrown mobile backend infrastructures."

While public clouds remain the preferred infrastructure of enterprise mBaaS platforms, these technologies must embrace hybrid and private cloud models in order to mitigate traditional privacy and security concerns associated with the adoption of most cloud infrastructures in the enterprise.

Supporting diversity of models is not as big of a challenge as it might seem. Enterprise mBaaS technologies are exponentially simpler to deliver in a hybrid or private cloud model compared to their infrastructure or Platform-as-a-Service counterparts.

Operationally Ready

During the last few years, enterprises have invested in building different operational infrastructures and processes to enable the usage of connected devices. Technologies like mobile device management (MDM) or mobile application management (MAM) have become an integral component of any enterprise mobile strategy.

In order to enable enterprise-ready mobile apps, mBaaS platforms should provide seamless integration with mobile operations technology stacks, including MDM and MAM technologies. This capability will allow developers to build enterprise mobile apps that are compliant with corporate policies while simplifying the provisioning and management lifecycles of those apps.

Not Everything is Middleware, We Need Apps

Enterprise mobile platforms have traditionally focused on providing the required infrastructure to build mobile applications. Because those platforms mostly provide infrastructure capabilities, organizations are left with no option but to build every single app completely from scratch. In the modern app economy, enterprise mobile platforms should provide more than just infrastructure and enable organizations with a portfolio of mobile business apps that address some common business scenarios.

Because of the simplicity of its delivery model, mBaaS platforms are in an enviable position to enable the next generation of mobile business apps. In that sense, mBaaS platforms should complement its infrastructure capabilities with mobile applications that can be adapted and tailored by organizations embracing the platform. This model will allow organizations to receive tangible benefits from the mBaaS platform from day one by having access to various mobile apps that can be customized for their specific needs.

Summary

Because of the increasing integration needs of enterprise mobile solutions and the complexity of the current incumbents, mBaaS platforms are positioned to evolve into a new type of enterprise middleware. To accomplish that, mBaaS platforms MUST provide enterprise-ready capabilities in areas such as system integration, security, and MDM-MAM-enablement that will simplify the implementation and management of enterprise mobile apps. Finally, mBaaS platforms have a unique opportunity to enable and deliver business-ready mobile apps that solve some of the most common scenarios in the mobile enterprise.