Jumping into the PaaS Pool: Why Platform as a Service is the Next Hot Cloud Service

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WHY PLATFORM AS A SERVICE IS THE NEXT HOT CLOUD SERVICE

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JUMPING INTO THE PaaS POOL:
WHY PLATFORM AS A SERVICE IS THE NEXT HOT CLOUD SERVICE

EXECUTIVE SUMMARY

Is Platform as a Service the philosopher’s stone of the cloud? Like the element of ancient alchemy legends, Platform as a Service (PaaS) promises eternal life to cloud providers, and the ability to turn bare metal (infrastructure) into gold. Or at least, that’s what cloud providers seem to believe. In a rush to maximize cloud revenue and attract customers, providers are creating PaaS services that ride on top of their cloud infrastructure services or underlie their cloud software services.

With PaaS definitions comprising everything that falls between infrastructure and applications, there’s a lot of territory for cloud providers to scrap over. In addition to development platforms (the most common definition of PaaS), providers are offering platforms that comprise functionality for delivery, administration, and integration of SaaS-based software. Moreover, in the complex ecosystem that exists to deliver SaaS applications to business users, PaaS services represent an important jump-off point for collaboration and integration among multiple vendors and participants.

With so many PaaS offers in the market, providers face a challenge to attract the developers they need. In the growth phase of the PaaS market, most providers couch their market messaging in terms of PaaS versus traditional, on-site development. They emphasize the benefits of the cloud itself—that is, utility pricing, scalability, and avoidance of investment in hardware. But those messages do little to distinguish among PaaS offers. Furthermore, the software development tools themselves represent only part of the PaaS offer. Most PaaS services support open source tools and languages that developers are already comfortable with (e.g., Ruby, Java, Python), and that they can acquire from any number of sources.

If the cloud benefits are common to all PaaS, and if developers have their choice of PaaS offers that support their favorite programming languages, then how can PaaS providers differentiate their services? The current leaders have elected to address different market segments with PaaS offers that surround the development tools with varying components for management, deployment, and application integration. PaaS providers are also inserting themselves into the SaaS sales and delivery ecosystem, linking software developers to end users.

Because PaaS is more than application development, success is not restricted to companies that have a history of commercial software development. Communication Service Providers such as AT&T, and cloud infrastructure providers like Amazon Web
Services are charging into the PaaS market alongside software companies like Microsoft, Google, and Salesforce.com.

In this report, Stratecast examines how PaaS fits into the SaaS development and delivery ecosystem. We look at different approaches that cloud leaders are taking to integrate PaaS into their portfolios, and offer our view of the future of PaaS.

**INTRODUCTION**

Platform as a Service (PaaS) is the hottest topic in cloud computing. Whether their heritage is in hosting, application development, network or managed services, cloud service providers are building PaaS components to round out their portfolios and attract new customers.

So far, their efforts are not yielding significant revenue. In the nascent cloud service market, in which more mature Infrastructure as a Service (IaaS) services represent only $1 billion in revenue, PaaS barely represents a blip. Many providers are just getting started with their PaaS launches; others are still considering their strategies.

Yet, as the cloud market matures, PaaS may represent the “killer app” that makes the cloud worthwhile for enterprises, and the greatest opportunity to maximize cloud revenue for providers. PaaS represents the glue that integrates custom and commercial apps and corporate IaaS and SaaS, without requiring cumbersome programming. PaaS can also make it possible for non-programmers to create their own applications, thus enabling small businesses and non-technical departments to automate their business processes.

In this report, Stratecast examines the definitions of PaaS. We look at the SaaS delivery ecosystem, and how PaaS can streamline the path to revenue. Finally, we profile the PaaS strategies of leading cloud service providers.

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1 U.S. IaaS market revenues, 2011. See CC 1-5. 2011 Cloud Infrastructure as a Service Market: On the Road to Commodity Status (November 2011). For information on how to obtain this or any Stratecast or Frost & Sullivan report, contact your account executive or email inquiries@stratecast.com.
DEFINING PAA S

The National Institute of Standards and Technology (NIST), which has developed widely accepted definitions around cloud computing, offers the following definition of PaaS:

“The capability provided to the consumer is to deploy onto the cloud infrastructure consumer-created or acquired applications created using programming languages, libraries, services, and tools supported by the provider. The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, or storage, but has control over the deployed applications and possibly configuration settings for the application-hosting environment.”

The broad definition covers a lot of territory related to development, hosting, and delivery of Web-based (SaaS) applications. For cloud service providers looking to expand their impact, there are several elements that are particularly attractive about PaaS:

- **PaaS provides enhanced functionality to the provider’s infrastructure services.** In essence, PaaS represents a value-added service. This, in itself, is consistent with the direction of many IaaS providers who are looking to increase revenue per customer and grab a larger share of customer IT dollars. In addition, PaaS provides a steady source of customers for the provider’s IaaS business.

- **PaaS is an integral component to development and delivery of SaaS applications.** PaaS gives cloud providers the opportunity to place themselves squarely in the middle of the huge and growing SaaS market. For IaaS providers, PaaS enables them to carve out a new and essential role in SaaS development and delivery, situated between software developers and end users (business or consumers). For SaaS providers, PaaS is an opportunity to broaden their reach to developers in adjacent spaces.

**What's Included in PaaS?**

PaaS generally includes templates, Application Programming Interfaces, and tools that facilitate software development and delivery. Like other cloud services, PaaS runs on a multi-tenant architecture, with built-in scalability for deployed software. To be attractive to developers, the platform’s tools must be easy to use, flexible and comprehensive, ideally utilizing open standards, common development environments, and flexible user interface tools to enable the software to run on multiple platforms. Capabilities may include integration with other commercial or custom software, billing tools, management and administrative capabilities, and customer self-service portals.

Cloud service providers may use PaaS platforms to offer aggregated applications from multiple developers. To facilitate this, the platform usually includes tools for managing multiple SaaS services from multiple developers, and for serving multiple customers. The tools may include billing capabilities at the customer and service level, tracking of terms

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and licenses, and remittance of fees back to the developers.

In addition, providers may use their PaaS platforms to offer value-added functionality and/or services that can be incorporated into or delivered with applications deployed on the platform. This may include identity and access management services, security services on a per-customer or per-application basis, and analytics and reporting services.

Who is Using PaaS?

There’s no single best PaaS for all developers, because developers have different needs. As a result, different PaaS providers target their services toward different developer segments. For example:

- **Independent Software Vendors (ISVs)** – The explosion of innovative Web-based and mobile apps for consumers and businesses has been facilitated by the availability of simple, low cost tools. PaaS is ideal for start-ups and small to midsize development organizations that have limited capital budgets or IT management resources, as well as ISVs of all sizes that are looking to speed up the development cycle. In addition, ISVs seeking a market for their services benefit from PaaS providers that offer a marketplace.

- **Corporate IT Developers** – In most companies, in-house software developers have responsibility to develop, customize and integrate software required to run the business. While some projects may require new development, most of their activity involves upgrading, enhancing, and customizing complex software systems, such as ERP or operations. A challenge for PaaS providers is that corporate developers are often resistant to new processes and tools, especially those that they perceive to impose restraints. As a result, providers who target corporate customers—including IBM and AT&T—often position their PaaS services in the context of a broader cloud strategy.

- **Contract Developers** – Several PaaS providers, including Google, have found a receptive niche among companies who provide outsourced development work for corporate business departments. While corporate IT may retain some oversight, these projects generally are considered good candidates for outsourcing because they are limited in scope and criticality. Such projects often have tight budgets and short timeframes. Furthermore, the developers are less likely to have ingrained development habits and preferences, making them more open to a PaaS solution.
WHY PAAS (FOR DEVELOPERS)?

For developers, PaaS represents a new business process, a new way of approaching software development, rather than simply a fresher set of tools. Some developers resist the new approach as limiting their flexibility—for example, requiring the use of specific software languages or pre-defined templates. Others, particularly independent software vendors, embrace PaaS because it enables them to concentrate on just the top layers of the software stack, leaving the details of scaling and infrastructure management to the PaaS provider.

PaaS solutions offer the following benefits over traditional software development:

- **Faster development** – PaaS takes the “grunt work” out of development with preconfigured images, APIs, and user interfaces for deploying in multiple environments. This enables developers to deploy their applications faster, as well as easily make upgrades and enhancements.

- **Fewer bugs** – By using a clean, consistent image of the app for testing and debugging, developers can avoid inadvertently introducing errors and vulnerable code during multiple test iterations.

- **Broad delivery options** – PaaS solutions should enable SaaS delivery to multiple operating systems and devices—including mobile environments—with little or no custom coding.

- **Richer applications** – PaaS catalogues often include pre-integrated functionality (e.g., search, analytics, reporting) that the developer can include in the application, thus enhancing the overall functionality.

- **Turnkey operations** – PaaS platforms generally support application delivery and management with tools for billing and customer administration, thus enabling the app to be launched faster and at lower cost than a go-it-alone approach.

- **Budget-friendly** – As with all cloud services, PaaS is offered on demand, with pay-as-you-go pricing that allows developers to align their hosting expenses with their revenue. With the PaaS provider responsible for all hardware investment, PaaS requires no capital outlay from customers.

- **Collaboration-enabled** – In contrast to traditional lone-wolf development processes, most cloud development platforms include collaboration capabilities. By enabling multiple contributors to easily provide input into the development and review process, PaaS users find that problems can be discovered and resolved more easily and quickly.

- **Provide access to broad customer set** – As noted, for ISVs, an attractive feature of some PaaS offers is access to a marketplace for reaching and selling their SaaS to users.
WHY PAAS (FOR PROVIDERS)?

Providers from many different segments of the market are adding PaaS to their portfolios, and the drivers vary by segment:

- **Commercial SaaS providers** – By opening their platforms to external developers, commercial software providers are able to add value to their own applications with minimal effort. Software and applets developed on the platform by outside developers integrate with the provider’s own SaaS application, thus enhancing the functionality of the commercial SaaS, and extending its usefulness at minimal cost to the provider.

- **Cloud infrastructure providers** – Providers that have developed their cloud strategies around infrastructure services—such as AT&T, Amazon Web Services, and Terremark—may appear to be out of their element in providing software development tools. Yet, these companies point out that they have a long history of software development: they each have large teams of in-house developers who are responsible not only for the internal applications that keep the company running, but also other network-based applications that increasingly are served up to customers in the form of “Everything as a Service” functionality—e.g., network management, security services, user portals. For these companies, PaaS is a way to drive usage of their IaaS services, as developers host their applications in the cloud. Furthermore, PaaS represents an opportunity for such providers to tap into the lucrative SaaS market—to insert themselves between developers of commercial software and the end users. By offering PaaS tools, these providers can gain revenue from commercial software developers that use their platform and IaaS. And by delivering the SaaS to end users, via portals or marketplaces, they also have an opportunity to earn revenue from the delivery system.

- **Cloud aggregators/integrators** – These providers use cloud platforms (their own or those developed by others) to build wraparound or value-added functionality to SaaS applications developed by a variety of developers. Aggregation platforms usually offer a limited number of pre-screened best-of-breed commercial SaaS applications that will appeal to a specific target market (e.g., business customers, small businesses, a particular industry). The aggregator offers these services as a bundle with their own complementary services—for example, security services, backup and restore, or unified communications. PaaS services offered by aggregators may include platform-based customer self-service tools for identity and access management, billing reports, and usage reports. In some cases, CSPs and MSOs are taking on the role of aggregator, using a robust PaaS platform to deliver value-added services to their consumer or small business customers.
• **Communication Services Provider/Wireless Provider/Cable MSO** – These providers may use a PaaS-based platform to offer commercial SaaS apps, either bundled with their network service offers or available for a separate fee. CSPs are now sensing an opportunity to offer greater value to their business customers by providing access to an integrated suite of business applications that can be accessed via any network, any device.

**PAAS PROVIDER PROFILES**

PaaS providers vary, both in the functionality of their platforms and in their market approaches.

**IBM SmartCloud Application Services**

IBM introduced a PaaS service into its extensive SmartCloud portfolio last fall. The platform services, called IBM SmartCloud Application Services, are built to integrate with IBM's Infrastructure as a Service offers: SmartCloud Enterprise and SmartCloud Enterprise+.

IBM SmartCloud Application Services offer a comprehensive array of tools for developing, deploying, managing, and integrating corporate applications in any environment (including private and public clouds, on-premises and hosted). Capabilities include tools for application lifecycle (e.g., development and collaboration); application resources (such as database and backup services); application deployment environments; integration; and application management that includes application-specific patterns and templates for popular commercial software.

Like Google and Salesforce.com, IBM has a strong presence among ISVs. In fact, one of the company’s strengths is its deep ecosystem of software vendors, integrators, and channel partners, who participate in its active partner program. But IBM is also targeting corporate development organizations. Frequently resistant to the constraints of a PaaS, these developers are accustomed to working autonomously, using their preferred languages and homegrown processes to develop, test, deliver, and tweak their applications. IBM is looking to win over this group by positioning its PaaS as part of a larger decision that solves IT inefficiencies and increases productivity. The company emphasizes how SmartCloud Application Services can simplify and strengthen the entire IT environment, offering a consistent and flexible set of capabilities that enable enterprises to respond quickly to changing market needs.

Furthermore, IBM is one of few providers that are tackling the greatest challenge to corporate developers: time-consuming maintenance of legacy software systems. Complex systems like SAP are critical to the running of many corporations, but their legacy coding and frequent customization makes them poor candidates for cloud migration. IBM’s Application Management capabilities will enable companies to support SAP and other commercial software on the IBM SmartCloud platform. This capability, currently in beta, may provide the tipping point for movement of critical applications into the cloud.
At its most basic, PaaS allows developers to do the same old thing faster/cheaper/easier. But that approach misses the true value of the cloud. Customized, standalone software has limited value in today’s market: both business and consumer users expect applications to integrate functionality from other services and to be available to whatever device (smartphone, laptop) and modality (Web, mobile, even TV) they are using. **As such, the real value of a PaaS platform is that it facilitates integration and standardizes application performance and delivery.**

This is why PaaS can’t be assumed to be the domain of traditional software providers. Instead, successful PaaS is being brought to market by a broad range of service providers, including IaaS, SaaS, traditional hosting, and network service providers.

For cloud providers, there’s another reason to invest in PaaS: a high-functionality PaaS offer has the potential to kickstart cloud adoption among enterprises. When integrated with IaaS, PaaS can bridge multiple delivery environments and management tools, streamlining not only development but also broader IT processes, and giving enterprises the flexibility to respond quickly to changing market conditions.

For enterprise IT, it’s all about applications: building, integrating, managing and delivering best in class applications to users, securely and with highest performance levels. The provider that offers a robust PaaS offer to help them do that job will succeed in the cloud market.

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