Emerging Markets Queries in Finance and Business

iPaaS: Different Ways of Thinking

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Abstract

The concept of iPaaS is in its infancy, and very few vendors and users even recognize the term. Some see iPaaS as an evolution of integration as a service, which has been widely adopted for cloud services integration. Another point of view presents iPaaS as an emerging form of delivering application and data integration capabilities, consolidating multiple cloud services in a suite aimed at the integration and governance of any combination of on-premises and off-premises applications, within or across organizations. The iPaaS is designed to act in the middle and help connect to a number of services across the layers. Issues come from the convergence and consolidation process toward iPaaS, which will be turbulent. Many providers will disappear; in the race to leadership, vendors will bring to market immature technologies; some mergers and acquisitions will fail; some vendors will not be able to effectively scale up their platforms to support large cloud workloads; and other vendors will struggle to provide quality support to a growing number of clients.

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1. Introduction

The new reality of cloud computing promises easy to use and pay-per-use access to a fast growing range of application services and capabilities. But as organizations follow the cloud opportunity, the need for

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on-demand services delivering application and data integration platform capabilities is becoming much more widespread than it has ever been Lutz Schubert, 2010.

Large, midsize and even small organizations are rapidly adopting different forms of cloud services, which bring together requirements for their integration with established on-premises applications and data, as well as with other cloud-based applications. To address these needs, organizations are increasingly turning to iPaaS offerings because of their close affinity with SaaS and the anticipated greater ease of use, lower costs and faster time-to-integration than traditional integration platforms.

In some cases, for example, in small or midsize organizations with little or no investment in integration middleware, iPaaS will be adopted as an alternative to established integration products. But "in the cloud" and "on-premises" integration platforms will complement each other and coexist in most large and midsize organizations.

2. Approaches of iPaaS

In 2010, Gartner identified iPaaS as an emerging form of delivering application and data integration capabilities. The concept of iPaaS is in its infancy, and very few vendors and users even recognize the term. However, Gartner believes that, during the next three years, a recognizable, sizable and vibrant iPaaS market will be established. The precursor integration as a service market is well-established which proves that, technically, the iPaaS model can work, sizable which proves that customers are willing to adopt iPaaS-style offerings - approximately $945 million in revenue in 2009, and supported by well-grounded and powerful vendors Massimo Pezzini, Benoit J Lheureux, 2011.

Integration platform as a service is a suite of cloud services aimed at addressing a wide range of cloud, B2B, and on-premises integration and governance scenarios. It is a suite of cloud services enabling development, execution and governance of integration flows connecting any combination of on-premises and cloud-based processes, services, applications and data within individual, or across multiple, organizations.

The iPaaS offerings usually combine cloud services for protocol bridging, messaging transports, transformation, routing, service virtualization, adapters, orchestration, partner community management, MFT, registry/repository, development tools and others. It involves a set of cloud-based services providing a multitenant and scalable platform to support a variety of integration scenarios:
- cloud to on-premises,
- cloud to cloud,
on-premises to on-premises,
ecommerce B2B integration Massimo Pezzini, 2011.

In addition, iPaaS provides cloud-based services aimed at enabling design time and runtime governance of the integration artefacts, process models, compositions, transformation and routing rules, service interface definitions, SLAs, policies, utilized to address specific integration issues. The combination of integration and governance capabilities provided by iPaaS is meant to respond to emerging user requirements to acquire, initiate and manage these functionalities as a single, integrated infrastructure. This demand is a consequence of the growing adoption of service-oriented architecture SOA, which postulates a strong connection between integration and governance.

The best practices, which have matured in more than a decade of SOA experience, remain valid as cloud computing enters the picture. Gartner believes that users will continue to address integration and governance in a unified fashion, even in an increasingly cloud-centric world, and, consequently, will favor vendors capable of providing all of the relevant cloud services as a consolidated platform.

However, many vendors will initially provide only subsets of a full iPaaS offering, while they follow the learning process of this new market. Similarly, users will firstly adopt iPaaS offerings in order to support specific usage scenarios – specifically cloud to cloud, cloud to on-premises and e-commerce B2B integration - for which the iPaaS value proposal of fast time to integration and low capital investment is more promising than the use of established on-premises data or application integration platforms.

The obvious benefit for users that adopted iPaaS is that they don't need to acquire, initiate and manage hardware and application infrastructure software in their own data centres, as they would when using traditional, on-premises integration and governance platforms. The notion of running integration flows on a third-party integration platform provided as a service is well-understood and proven, because it's very commonly used in the context of e-commerce B2B integration and, increasingly, for cloud services integration. At least in an initial phase, iPaaS offerings will be more rapidly adopted to support these more proven scenarios. For systematic integration of on-premises applications or SOA infrastructure implementation, the most viable option will remain, for many users, the use of traditional on-premises integration middleware or, some form of private iPaaS.

However, as iPaaS offerings mature and industry experience and skills availability expand, user organizations and service providers will increasingly look at iPaaS as a viable deployment alternative for features traditionally provided by on-premises application infrastructure middleware, enterprise service bus suites B2B integration software managed file transfer, data integration tools, SOA governance platforms and other technologies, for a wider range of use cases Philip Winslow, Sitikantha Panigrahi, Daniel Morriso, 2012.

An iPaaS offering provides users with a combination of cloud services – collectively called integration platform services – to develop, execute and manage integration flows, that is, custom-developed software and metadata implementing the "integration logic" needed to connect multiple applications by performing the appropriate message transformation, routing, protocol conversions, service virtualization, orchestrations, security federation, usage tracking, administration, monitoring and management.

From the client's point of view, the local agent is managed, updated and supported remotely by the iPaaS provider. Users develop, test, deploy and monitor the execution of their integration flows "in the cloud" and pay the provider for a "service." At onboarding time, iPaaS clients implement the local agent software appliance, possibly in multiple instances for high availability and scalability, which will be under the full control of the iPaaS provider. When users follow an integration flow, the metadata or code implementing it gets transparently deployed on the proper local agents. At runtime, these report performance and statistical data to the iPaaS cloud, so that users can track and manage their integration flows from the iPaaS management console.

An iPaaS supports integration within the same organization, as well as across multiple organizations, in a B2B fashion that often involves the e-commerce supplier and customer, but may also include any multi-
enterprise integration and collaboration. In addition to integration platform services, an iPaaS provides governance platform services, including registry/repository, artefacts life cycle management, policy management and enforcement, as well as the extraction of the associated data. The iPaaS governance platform services can potentially be used independently from the integration platform services — for example, to support or enforce governance processes of an SOA initiative using a classic on-premises SOA backplane.

Ideally, iPaaS services are delivered to multiple concurrent communities of users, tenants, in an elastic, scalable and self-service fashion, with assurance of tenant integrity, security and service levels. Many iPaaS implementations do not currently support all these attributes, but most likely will do so over time.

Integration flows running on iPaaS can connect, in a many-to-many fashion, any combination of on-premises and off-premises applications, services, processes and data. Integration flows can be developed by the iPaaS client, which has access to the iPaaS development environment, or by a service provider, including the iPaaS provider itself, on behalf of the client. If the development environment is only available to the iPaaS vendor (and not to clients and other service providers, the offerings are referred to as “embedded iPaaS,” because their capabilities are only available embedded in a broader service, integration brokerages or cloud services brokerages, delivered by the iPaaS provider.

Through the iPaaS monitoring, management and administration platform services, users deploy and administer integration flows, monitor their execution and manage their behaviour, it can change priorities, QoS requirements or security policies. An iPaaS also provides governance platform services, registry/repository, artefacts life cycle management, policy management and enforcement, as well as governance data collection. The iPaaS services can be provided to clients in the form of a software product, typically referred to as a cloud-enabled integration platform CEIP - providing support for multi-tenancy, elasticity, self-service support, tracking, metering and billing with assurance of tenant integrity, security and service levels, Massimo Pezzini, 2011.

User organizations' most common approaches to iPaaS involve consuming them in the form of a public cloud service or by acquiring a CEIP, which is then implemented on premises, whether on a traditional server cluster or on a private cloud infrastructure. On-premises deployments are typically meant to offer a private iPaaS to a set of well-defined and pre-agreed tenants such as business units of an enterprise or different departments in a government organization. iPaaS may come to users in multiple forms along a complex value chain. The first link is represented by vendors providing a CEIP product, which end-user organizations can acquire and deploy in their own data centre to implement a private or community iPaaS.

The CEIP vendor itself, or a third-party service provider, may use the CEIP to implement a public iPaaS offering. iPaaS doesn't provide the service of integrating a specific set of applications for a certain user organization. An iPaaS provides the platform services that end users or service providers can use to implement and support such a specific integration scenario. However, in many cases, vendors will provide as a service running on their own or a third party's iPaaS "prepackaged integration flows" often referred to as cloudstreams when at least one of the endpoints is a cloud service meant to accelerate the implementation of the most common integration scenarios by customizing, extending and configuring predefined integration flow templates, Massimo Pezzini, Benoit J Lheureux, 2011.

At this stage numerous drivers and inhibitors are at play stage, when it comes to user organizations' adoption of iPaaS. To a certain extent, iPaaS is a proven concept tested for years by e-commerce B2B integration-as-a-service providers. The financial benefits, operating expenditure vs. capital expenditure, of cloud services and the expected fast time to integration and ease of use of iPaaS are important value propositions for users.

There are many factors for the adoption of iPaaS, especially within small and midsize businesses that have minimal investments and skills in traditional integration platforms. However, fear of a higher long term cumulative cost, fragmentation, lack of skills and industry best practices, lack of trust in a new paradigm, which includes security and privacy concerns, compounded with a still limited industry experience in the use of
iPaaS for the most traditional internal application and data integration and SOA scenarios, are all factors limiting iPaaS adoption. This is especially true among large organizations with established investments in traditional integration platforms. Most of these inhibitors are not technical, but come from most user organizations' and vendors' lack of a holistic integration vision, which encompasses cloud, B2B, SOA, application, process and data integration requirements. Such a lack of vision favors a limited approach to integration and narrows iPaaS adoption to just a few, well-defined scenarios, even if it could also benefit organizations with a broad spectrum of requirements.

Waiting too long for the maturation and consolidation of the market may be dangerous for organizations as their competitors move ahead with leveraging iPaaS to try to reduce costs, improve efficiency and creatively build competitive advantage. In the trade-off between technology and vendor risks and improved efficiency and efficacy lies the key to successful iPaaS adoption.

Gartner expects iPaaS adoption to grow significantly during the next five years. Via its predecessor, integration-as-a-service offerings, iPaaS is already one of the main options available to users to connect with external business partners and to integrate cloud-based applications with their current on-premises applications from Fabrizio Biscotti, et al, 2010.

Virtually all user organizations, large or small, must integrate applications and, in a growing number of cases, at least some of these applications are in the cloud. New application development still takes place on a massive scale in some industry sectors, such as financial services, telecom, Web commerce, online gaming, social networks, cloud services and others, but most mainstream enterprises primarily look at packaged software. These users will increasingly adopt iPaaS to address cloud integration issues in an attempt to avoid the high cost and complexity of traditional integration platforms and the relatively long time-to-integration associated with utilizing SOA backplanes.

3. Conclusions

In the short term, through 2013, leading-edge user organizations, looking for greater flexibility, faster time to market, support for new cloud-centric business models and cost reduction should look at iPaaS approaches as potential alternatives to traditional non-cloud-based integration and governance platforms for a wide set of requirements. Given the nascent state of the market, mainstream organizations should consider iPaaS offerings as complementary to traditional platforms, and primarily adopt them to address low-risk scenarios. For most large organizations, the coexistence of possibly multiple iPaaS and traditional on-premises application infrastructures will be the norm.

On the other hand, longer term, 2015 and beyond, users should prepare for a potential major rebalancing of the centre of gravity of their integration and governance strategies between iPaaS and on-premises platforms. By 2016, at least 35% of all large and midsize organizations worldwide will be using one or more iPaaS offerings in some form Benoit J, et al, 2011, Massimo Pezzini, Benoit J Lheureux, 2011.

Application infrastructure middleware vendors, SaaS providers, packaged application vendors, system integrators, and integration brokerage and cloud services brokerage providers should look at iPaaS, also in the form of its rendition as an on-premises product, a CEIP, both as a business opportunity and an enabling platform for their value-added offerings.

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