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THE QUEST FOR A CLOUD INTEGRATION STRATEGY

ENTERPRISE INTEGRATION

Historically, enterprise-wide integration and its countless business benefits have only been available to large companies due to the high costs of purchasing and implementing integration solutions, which until recently amounted to hundreds of thousands of dollars. Those who could afford to purchase and implement enterprise integration solutions realized cost efficiencies from automated business processes spanning multiple systems, the elimination of costly and error-prone manual data entry, and faster responsiveness to changing business needs.

Small and medium sized organizations, unable to afford comprehensive solutions, generally had no other alternative but to piece together a combination of 1-to-1 integration solutions with custom code, or face the burden of dealing with siloed business applications. Fortunately, the development of Software as a Service applications has leveled the playing field in terms of affordability but it has also changed the integration game significantly, due to the unique characteristics of the model itself.

ADVENT OF SOFTWARE AS A SERVICE (SAAS)

The Software as a S ervice (SaaS) model of software deployment has revolutionized the industry and opened the door for businesses of all sizes to gain access to enterprise grade applications with affordable, pay-as-you-go pricing. According to IDC (2005), the key characteristics of SaaS applications are:

- Network-based access to and management of commercially available software
- Multi-tenancy architecture which enables multiple customers or users to access the same data model
- Centralized feature updating, which eliminates the need to download patches and upgrades
- Activities that are managed from central locations rather than at each customer's site, enabling customers to access applications remotely via a web browser

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SAAS IMPLICATIONS FOR INTEGRATION

While SaaS applications offer outstanding value in terms of features and capabilities relative to cost, they have introduced several challenges specific to integration. The first issue is that the majority of SaaS applications are point solutions and only service one line of business. As a result, companies without a method of synchronizing data between multiple lines of business are at a serious disadvantage in terms of maintaining accurate data, forecasting, and automating key business processes. According to Ray Wang (2008), Analyst at Forrester Research, "The successful adoption of SaaS solutions will transform usage from purpose built point solutions to integration into mission critical processes."

APIS ARE INSUFFICIENT

Many SaaS providers have responded to the integration challenge by developing application programming interfaces (APIs). Unfortunately, accessing and managing data via an API requires a significant amount of coding as well as ongoing maintenance due to frequent modifications and updates. Furthermore, despite the advent of web services- there is little to no standardization or consensus on the structure or format of SaaS APIs. As a result, the end users' IT department expends an excess amount of time and resources developing and maintaining a unique method of communication for the API of each SaaS application deployed within their organization.

DATA TRANSMISSION SECURITY

SaaS providers go to great length to ensure that customer data is secure within the hosted environment. However, the need to transfer data from on-premise systems or applications behind the firewall with SaaS applications hosted outside of the client's data center poses new challenges that need to be addressed by the integration solution of choice. It is critical that the integration solution is able to synchronize data bi-directionally from SaaS to On-Premise without opening the firewall. Best of breed integration providers can offer the ability to do so by utilizing the same security as when a user is manually typing data into a web browser behind the firewall.

INTEGRATION ON DEMAND?

Forward thinking companies that have realized the outstanding value proposition of the SaaS model are looking for IT infrastructure and support that offers the same. End users research, try, and purchase SaaS applications in a self-service manner without ever leaving their web browser. Following purchase, maintenance is low as there are no servers to install or maintain and updates are handled centrally by the SaaS provider. Savvy businesses are seeking integration solutions built from the ground up as pure SaaS which also offer the ability to build, deploy, and manage integration processes from a web browser.

"The successful adoption of SaaS solutions will transform usage from purpose built point solutions to integration into mission critical processes."

Ray Wang, Forrester Research

INTEGRATION STRATEGIES

One critical integration challenge for companies is deciding just what kind of a SaaS integration provider they're going to use. In addition to SaaS, many businesses are supported by a complex ecosystem consisting of a combination of on-premise, platform-as-a-service (PaaS), e-commerce, and cloud-based applications. Rather than look at each integration project in a silo, forward thinking companies select an integration strategy that will support all of the above in a single, seamless solution. The four primary choices businesses currently have for SaaS integration include: building a custom-code solution based on a SaaS vendor's application program-ming interfaces (APIs); purchasing conventional integration software; subscribing to an integration-as-a-service (IaaS) solution; and engaging professional services or a system integrator. According to Benoit Lheureux, an analyst for Gartner, "The challenge for customers is to know when to choose one approach over another. The answer depends heavily on each customer's particular situation, including factors such as internal integration skills and overall B2B strategies."

The following factors should also be considered when evaluating the four integration options:

SCALABILITY

Ensure that the integration solution chosen is able to grow with your business. Con-sider whether it will scale across multiple geographic locations and, if yes, will the IT staff be able to monitor all integration activity from one central location? Also, many SaaS applications have very particular usage restrictions about how much data can be sent through their API in a given time window. It is critical that as data volumes increase that the solution adequately is aware of and handles those restrictions.

RESOURCES (IMPLEMENTATION, MAINTENANCE)

The amount of resources required varies greatly amongst the integration strate-gies above. Companies that choose to build or buy integration solutions should be prepared to allot significant amounts of IT time and budget for the installation and ongoing maintenance of servers, software, and code. For businesses with limited IT resources, outsourcing to an Integration as a Service (IaaS) provider is highly rec-ommended. However, even with hosted solutions, it is important to query each pro-vider so as to determine the resources required to build and maintain integrations.

COST

Cost is a critical factor in the decision to build, buy or partner. Building custom integrations is often found to be a major drain on internal IT resources. The cost of an integration solution to support SaaS and cloud-based applications should be affordable and comparable to a SaaS pay-as-you-go model.

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COMPATIBLE APPLICATIONS & SYSTEMS

Integration solutions are not always a "one size fits all" situation- many are only built to accommodate specific applications and limit a company's ability to optimize integration by incorporating throughout the enterprise. Furthermore, if additional applications are purchased in the future- the solution should have the ability to extend to accommodate them and migrate data if need be.

WORKFLOW

Best of breed integration solutions offer more than just the transformation of data between two different formats. Workflow, which encompasses the end-to-end series of steps needed to automate a business process, is mandatory to ensure the complete automation of complex business processes. Secure and reliable communication, content-based routing, business logic rules handling, data transformation, cleansing, and validation are examples of real-world requirements to address what are otherwise manual tasks.

ON-PREMISE SOFTWARE

Conventional integration software has been around significantly longer than most Integration as a Service (IaaS) providers and, therefore, was a popular alternative to coding custom integrations. Packaged software is costly to purchase, install and maintain on-site and is unlikely to extend to the cloud. In addition, these solutions were not developed to meet the unique requirements of SaaS applications such as multi-tenancy.

For businesses that have already purchased software- it may be possible to leverage their current investment if the provider offers a SaaS connector strategy. Unfortunately, like many on-premise software companies, the integration software providers are probably puzzling over what their SaaS strategy needs to be. In order to be optimized for SaaS, their current technology will need to be re-engineered from the ground up and will completely disrupt their on-premise solution.

INTEGRATION AS A SERVICE

The recent development of Integration as a Service is a natural outcome of the convergence of Service Oriented Architecture (SOA) and SaaS. As businesses of all sizes migrate to SaaS and cloud-based applications, the need for solutions to allow them to interoperate and exchange data is obvious- as is the call for such solutions to be deployed and purchased in the same on-demand model.

When developed and built from the ground up in a pure SaaS model*, IaaS solutions are cost-effective, scalable, and flexible. Businesses minimize the use of internal IT resources as the service is typically made available in a completely self-service model, and can be configured, deployed and manage right from the web browser without having to write code or install any software or hardware on-premise.

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>
> **Benoit Lheureux, *Gartner***

For organizations with multiple business units, these solutions can be deployed to multiple geographic locations from a centrally managed, web-based dashboard. CIOs can also gain a comprehensive view of all integration processes within their organization with this same dashboard. This is a growing challenge as individual departments purchase SaaS application subscriptions often independently from one another.

Best of breed IaaS providers offer a single, seamless solution for a business' entire application portfolio including on-premise, cloud-based, and SaaS environments. Many providers offer pre-built connectors to leading application as well as the ability to develop custom connectors quickly and easily via visual, drag-and-drop technology. As mentioned previously, IaaS providers should offer a secure method of data transmission both in the cloud and behind the company's firewall for on-premise systems.

* Buyer beware of on-premise software vendors who market themselves as IaaS by hosting their packaged software product in a data center. That is an ASP model not SaaS and it will not scale over time, forcing their customers to absorb the increasing costs.

BUILDING CUSTOM INTEGRATION

For those businesses considering building custom integrations, there are several key pieces that must be included in order to develop a complete integration solution: the integration process itself, including learning the proprietary API's of the applications being integrated in order to build "connectors" to extract and load data; monitoring tools to provide logging to simplify error resolution; redundancy mechanisms to automatically handle scenarios where the applications being integrated become unavailable; and resiliency to support the frequent release cycles of SaaS applications and their corresponding APIs. Most people only account for the integration process itself, overlooking the other critical functionality and wind up spending exhorbinant time maintaining their custom code.

Custom coding integration processes is generally considered to be expensive, time-consuming and a drain on internal resources. Some find it to be a desirable option when a business needs to quickly connect no more than two applications, the data value is low, and it is not expected that the applications will change. However, given the dynamic nature of SaaS and cloud-based applications and the high value of the data exchanged between them- that scenario is rare.

MANAGED SERVICES/ SYSTEM INTEGRATORS

Though the introduction of on-demand Integration as a Service (IaaS) offerings, many growing businesses now have access to low cost, low maintenance integration solutions. However, companies with extremely limited or no IT resources also have the option of outsourcing their integration projects to either a Systems Integrator (SI) or electing Managed Services from their integration provider.

Prior to selecting a Systems Integrator, be sure to take into consideration the solution(s) they are advocating for the integration project at hand and take into account the five factors described above: Scalability; Cost; Resources; Compatibility of Applications & Systems: and Workflow. Beware of SI's that are promoting antiquated integration solutions that are not optimized for SaaS and cloud environments as they will quickly defeat the SaaS value proposition and will not scale. Fortunately, many SI's recognize the value of on-demand Integration as a Service solutions and add value through their domain expertise and willingness to solve the integration challenge on behalf of their clients.

For those businesses that prefer not to engage an SI but would need initial and ongoing assistance withintegration, many IaaS providers offer managed services to completely take on both the initial setup of the integration as well as the ongoing maintenance requirements. The main benefit of this alternative, in addition to reducing the strain on internal resources, is the ability to outsource integration projects to the experts in that area. As always, it is best to thoroughly investigate the provider, products, vertical expertise and services they offer to ensure that they are developed and deployed in the cloud to ensure compatibility with like applications and systems.

CONCLUSION

In summary, the advent of Software as a Service and Cloud Computing have revolutionized the software industry by providing access to enterprise-grade software and services via the web to businesses of all sizes. SaaS and cloud environments are characterized by web-based delivery, multi-tenancy, and centralized management and updates- completely unlike traditional software. As a result, new infrastructure and supporting services, such as integration, are crucial to the success of this model.

In choosing an integration strategy, businesses must be acutely aware of the repercussions of the path chosen as a poor choice could result in an ongoing drain of valuable IT resources and exponential costs to the organization. It is equally critical that businesses consider the need for scalability- both in terms of the growth of the customer base and the expansion of back-office solutions to include future purchases of SaaS, PaaS, and cloud computing applications. Best-of-breed integration solutions will mirror the SaaS value proposition and allow for scalability and expansion as businesses grow and change over time.