Buses Don't Fly: Why the ESB is the Wrong Approach for Cloud Integration

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SOA was DOA Thanks to the ESB

The shift to software as a service (SaaS) applications and the new era of open application programming interfaces (APIs) has led to a re-imagination of data, application and process integration in the enterprise. The vision of building a services-based abstraction layer to make enterprise business applications consistently and universally accessible is not new, but the technological game has changed, as have expectations of the business.

The service-oriented architecture (SOA) vision was powerful. Unfortunately, it was rarely realized in the on-premises world. When SOA was first conceived, the enterprise service bus (ESB) was seen as its enabling technology. An ESB as the service-based abstraction layer between applications was appealing to enterprise IT organizations that were struggling with constantly changing application versions and upgrades. "Loose coupling" would introduce much more flexibility to application lifecycle management, without brittle integrations frequently breaking. Unfortunately, due to the high cost of implementing the all-or-nothing SOA + ESB vision, most IT organizations very tactically continued to use the same old point-to-point enterprise application integration (EAI) patterns that were already in place. Very few IT organizations actually invested in the long-term services patterns that were initially envisioned and it seemed for many years that SOA was DOA -- dead on arrival.

Public cloud computing and SaaS application adoption is driving monumental changes in both the business and enterprise IT landscape. Subscription-based services allow business users to move faster than ever because they are easier

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to implement and use and, instead of large upfront capital investments, require only periodic operational expenses. In an attempt to keep up and stay relevant, IT organizations are increasingly embracing more agile methodologies that encourage rapid iterations and incremental innovations on shorter time cycles. Integration technologies are going through similar radical transformation in order to remain relevant in the new social, mobile, analytics and cloud affectionately called "SMAC" in enterprise IT architecture.

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Re-Inventing Integration in the Enterprise SMAC Architecture

There was a time, not that long ago, when on-premises application implementations (e.g. Siebel, SAP and PeopleSoft) could take years and cost millions before any business value was achieved. First introduced around this time, the typical ESB project had a similarly long implementation cycles and skyrocketing costs. These symptoms were often a result of some shortcomings in the ESB stack:

- Organizations need to install at least three environments -- development, test, and production -- for successful deployments, resulting in long installation configuration times.

- Canonical data models and distributed architectures, common with ESBs, need a lot of up front thought and rigor as ESBs is not very flexible in handling change management. A simple addition of a new field to the data structure of one of the endpoints in the integration can require changing every integration flow touching the endpoint, and ESBs are not built to absorb these changes and minimize disruption.

- Because ESB implementations need highly technical practitioners who also happen to be expensive, successful implementation costs often skyrocket.

Long implementation cycles, inability to absorb change, and high costs have made it difficult for these ESB solutions to keep up with fast evolving business requirements and often resulted in unmet expectations.

Widespread adoption of SaaS and cloud-based applications has disrupted the legacy software delivery model in a good way. Today, the speed of projects is an order of magnitude faster than just five years ago and return on investment is

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measured by actual adoption and revenues generated or costs savings. Both IT and the line of business are getting increasingly accustomed to purchasing and getting up and running with SaaS applications within days, and sometimes even in minutes.

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Relying on a legacy ESB to stream data in the enterprise is not a viable option. The ESB as an agile integration layer has been exposed as the long pole in project plans and customers are looking for alternatives. Modern cloud-based integration platforms are reinventing approaches to integration and can meet SaaS agility expectations while also providing robust connectivity to applications and data behind the firewall, thereby supporting business' need for speed.

From XML to JSON

ESBs were built when XML (eXtensible Markup Language) was the gold standard for encoding documents. XML was a great technical specification but had its own shortcomings. For example:

- XML has many complex constructs such as namespaces that are overkill and confusing for the average user;
- The overhead of XML encoding tags is significant; an XML document when parsed bloated up to seven times the actual data it encodes; and
- XML is ideal for structured information, but not for the semi-structured information that is becoming the norm in today's enterprise.

Architects and practitioners implementing ESBs built on XML as the internal document standard have to struggle with these complexities on a daily basis, which means customers have to pay higher wages to get the highly skilled experts to get it right the first time. Plus, this dependency on specialists takes self-service of integrations and data out of reach of the emerging group of "citizen integrators" in both the business and IT.

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Because of these challenges, the industry has moved on to a new, much more compact standard called JavaScript Object Notification (JSON). JSON is lightweight, flexible, and can handle structured and unstructured data. Next generation integration platforms are built on JSON as the native format to process data. On-premise ESBs or cloud integration platforms that are natively XML-based but apply translations to JSON at its extremities to keep up are going to fall short in the world of SMAC.

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From SOAP to REST APIs in the Mobile World

From an interaction perspective, ESBs were largely based on Simple Object Access Protocol (SOAP), which was once regarded as the protocol of the choice for inter-application and business-to-business communications. Today, APIs have become the de facto mode of publicly exposing content and internal business processes and the lines between enterprise and web content are rapidly blurring. Mobile and enterprise APIs are primarily exposed over the REpresentational State Transfer (REST) protocol with the data encoded via JSON. From an integration platform perspective, REST and JSON together are increasingly replacing SOAP and XML, making ESBs less relevant in today's enterprise SMAC architecture.

From ESB to Integration Platform as a Service (iPaaS)

So given these fast-moving and significant changes to application deployment and integration, what is needed to keep up and continue to drive innovation in the enterprise? Here are a few recommendations:

- Gartner analysts have created a new category for these integration platforms purpose-built for the world of SMAC. This category is called integration platform as a service (iPaaS). Explore vendors in this category, but approach with caution and make sure you look under the hood before you make the choice. Not all iPaaS are alike and in many cases the on-premise offerings have been ported to the cloud without natively rebuilding on the principles of REST and JSON.

- Do not throw away existing investments. Those integrations that are working should continue to run until you are ready to move them over to the new cloud integration platform.

- Add a layer of agility around these integrations using the iPaaS. Build new integrations using agile development methodologies that are afforded by iPaaS. This iPaaS layer consumes and complements existing ESB services and acts as the integration platform for any new integration development.

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- Embrace the innovation cycle afforded by the low cost of trial of iPaaS. No longer do you need long architecture and planning sessions before you try out new ideas. If you want to try out a new SaaS application, for example, use iPaaS to integrate it rapidly

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with your existing systems to verify whether it is a good fit in your existing application portfolio. If you are a marketer or a citizen integrator and are looking to invest in a new channel, such as LinkedIn or Twitter, pull in data yourself from the channel quickly to see whether it complements and adds value to your existing customer data. And if you are an IT professional, you can empower the business users to experiment themselves, leaving IT resources free for more strategic long-term projects.

ESBs advanced the grand vision of SOA by changing the IT mindset into one of "everything as a service". However, it fell short due to the lack of agility and lightweight standards that today's enterprises are all about. SaaS itself is a major manifestation of the SOA vision. Integration now remains the last mile of end-to-end enterprise agility. Sticking with legacy technologies such as ESBs will only hamstring organizations from innovating rapidly and capitalizing on emerging opportunities. Companies must reconsider some of the old paradigms and embrace technological advances in integration to stay competitive and relevant in today's fast moving markets.

About SnapLogic

SnapLogic is the leader in Elastic Integration, helping companies connect enterprise applications and data in the cloud and on-premise for improved business agility and faster decision-making. With the award-winning SnapLogic Elastic Integration Platform, organizations can more quickly and affordably accelerate the *"cloudification"* of enterprise IT with a single platform to connect data, applications and APIs. With SnapLogic, organizations no longer need to invest in separate tools for enterprise application integration (EAI) and extract-transform-load (ETL) style integration workloads. The SnapLogic Elastic Integration Platform instantly streams data between multiple SaaS applications such as ServiceNow, Salesforce.com and Workday as well as on-premises systems like SAP and Oracle. It also powers next-generation business analytics solutions such as Amazon Redshift and Tableau and delivers big data integration with SnapReduce 2.0.

To learn more about the SnapLogic Elastic Integration Platform visit www.SnapLogic.com.

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