

E-Book

# Application Integration: Infrastructure basics for real-world integrations

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***Companies must now focus their efforts on application integration in order to leverage existing systems. More business-to-business partnerships, burgeoning application portfolios, mobile and cloud computing are among the trends making application integration increasingly complex. That complexity calls for new integration strategies. In this E-Book, learn about infrastructure basics for real-world integrations.***

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## **No green fields for application integration**

**By Jack Vaughan**

The essential trait of enterprise development has been the same for some time: There is rarely an opportunity to work with a new green-field application. Companies instead must focus their efforts on application integration that leverages existing systems. Often, the "application developer" could just as well be named the "integration developer." That means they must learn to work with a variety of middleware tools.

Today, message queuing middleware appears as a very widely used integration method. But there are others. Forty-two percent of respondents cited message queuing as a method of application integration, according to The SearchSOA.com Reader Challenges & Priorities 2011-2012 Survey. Enterprise service buses (37%) and publish-and-subscribe middleware (35%) follow close behind. It is the increasingly heterogeneous nature of sources to be integrated that makes these and other types of middleware extremely valuable to the modern organization. Once, message queuing primarily was the province of banking systems – today its use is broader. It is even showing up in many Web 2.0 applications.

Figuring out middleware tool use is a complicated task. One type of tool seldom completely excludes use of another type. A well-known example is the enterprise service bus (ESB) - sometimes described as a "Swiss Army Knife" – which can incorporate several other middleware methods. The

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SearchSOA.com Reader Challenges & Priorities 2011-2012 Survey shows that messaging (51%) constitutes the major use case for the ESB, with orchestration and mediation gaining a close second at 46% according to survey respondents.

As recent SearchSOA.com user stories show, easier integration and greater flexibility are crucial. But the wide assortment of available tools heralds complexity - not easy integration. Used correctly, these tools can be powerful. A healthcare firm implements an ESB to unite disparate systems in order to present a single customer view, not only to call center staff, but also over the Web to the inquiring patient. For a state government, a consultancy builds a SOA-based componentized information system that can continually update an open source commercial rules engine to keep up with continually changing regulations. A paper manufacturer connects to cloud-based service in order to interoperate with a varied ecosystem of customers and trading partners.

The diversity of approaches requires a holistic approach.

Ken Vollmer, Forrester

Today, technology leaders look for software tools that tame integration complexity. At the same time, as their companies strive to be fleetier of foot, they look for more flexible integration platforms. And, as the speed of business increases, the speed of the middleware must keep up.

These drives are reflected in recent SearchSOA.com survey data. Survey respondents put ease of integration (65%), flexibility (54%) and scalability (43%) at the top of the list of important integration software attributes.

### **Holistic, agile integration**

“The diversity of approaches requires a holistic approach,” said Ken Vollmer, analyst, Forrester Research. That means taking the steps to find a more complete style of integration.

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Because the options and paths of integration are more diverse than ever, integration teams need to work more effectively with one another. That means application integration specialists must have at least some level of interfacing with business process and data integration specialists.

“A more holistic approach to integration starts with what currently exists in most organizations today - where you have silos of integration, expertise and knowledge,” said Vollmer. “Application integration, process integration and data [integration] are now typically covered with different teams and different tool sets.”

Vollmer said he sees these three integration styles coming together in terms of planning, strategy and implementation via centers of integration excellence, which are creating convergence at a high level according to Vollmer. New approaches to the integration practice will better support agile deployments, he said.

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## **Gartner: Better collaboration for new era of application integration**

**By Stephanie Mann**

LAS VEGAS -- More business-to-business partnerships, burgeoning application portfolios, mobile and cloud computing are among the trends making application integration increasingly complex today. That complexity calls for new integration strategies, according to Benoit Lheureux, a research vice president at Gartner Inc.

If application integration does not become a true area of expertise, Lheureux indicated, companies will find themselves at a serious competitive disadvantage within the next few years. IT team members representing diverse interests will have to communicate and collaborate much more effectively to succeed, he and others assert.

At Gartner's Application Architecture, Development & Integration (AADI) Summit in Las Vegas this week, Lheureux told a crowd of enterprise

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architects and application managers that their organizations will spend 33% more on application integration in 2016 than they will in 2013. The reason is simple, he said: "You will all be doing more integration."

The stakeholders involved in application integration now go beyond in-house IT departments, and communications can be challenging. Collaboration -- among business-to-business, or B2B, and data partners, analytics teams, information services, e-commerce, suppliers and even customers -- is said to be crucial to integration strategies for new era application environments. Open communication among those groups can enable better application portfolio management, and make it easier to pinpoint specific application requirements and business goals.

"We tend to have subject matter experts that don't really share their knowledge," said AADI conference attendee Raymond Holston, advisory analyst at a large health insurance company. "We're siloed. The subject matter should be freely available, and that's the whole collaboration issue."

In addition to advising more collaboration, Lheureux pointed to five main components of a successful modernized integration strategy. Calling it a "roadmap," he told his audience: "Complexity demands that you have the right kinds of skills in integration, and you can prepare yourselves for the application integration environment that includes mobile and cloud."

Mastering the following five integration competencies, Lheureux said, will help put companies at a competitive advantage over the next few years:

1. **Basic integration skills:** Basic integration capabilities should be delivered for all required IT projects.
2. **Advanced integration skills:** IT should take advantage of innovative integration capabilities.
3. **Rationalized infrastructure:** Infrastructure should be consolidated for all integration.
4. **Integration competency center:** IT should be organized so that it can effectively manage and leverage integration, delivering an "integration shared service" to all IT projects.

5. **Sourcing strategy:** IT should be able to deliver integration via any delivery model, based on changing business requirements.

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According to Lheureux, the main goal of this integration strategy is to connect applications and exchange master data across end-to-end, multi-enterprise processes.

### The nexus comes to app integration

The means of integration going forward will differ from what we know today. During the summit's keynote address, Jeff Schulman, Gartner group vice president and team manager, said integration will continue to increase in cost and complexity as a "nexus of forces" -- social, mobile, cloud and information -- continue to disrupt traditional IT activities.

"More than 50% of the cost of implementing new systems will be spent on integration in the next five years," Schulman said. "Our architectures are obsolete; the way we approach integration is obsolete; and the way we think about integration development is increasingly obsolete."

Many businesses have recently looked to such technologies as cloud application programming interfaces and representational state transfer (REST) services to ease integration challenges; Lheureux said they fall short.

"What you want me to say is that cloud APIs [application programming interfaces] are solving your problems, and that REST is the answer," Lheureux told his audience. "But we're not just automating the process and sending messages. We're looking at actually collaborating more at the process-execution level."

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## Is it possible to define SOA infrastructure?

By Alan Earls

What do people mean when they say SOA infrastructure? Service-oriented architecture may be a way of thinking, but it is also represented in a range of architectural practices such as message queuing middleware and enterprise

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service bus (ESB). Certain types of software may be used like Legos in a typical SOA project, but there is little consensus on what counts as SOA infrastructure.

Indeed, SearchSOA.com recently conducted a 2011 Readership Survey that solicited views on which of the contenders mattered most. The range of responses was striking as was the lack of any clear “winner.” For instance, none of the seven different technologies described earned more than a 50% score and the lowest scores were in the mid-20% range. (Survey choices were message queuing middleware; enterprise service bus (ESB); publish & subscribe middleware; SOA and Web services governance; test or management software; services registry/repository; service orchestration tools; and SOA appliances/XML gateways.)

In other words, there are a lot of choices and little agreement about what’s best. However, of the choices out there, message queuing middleware seems to be leading the pack, followed closely by ESB.

Mark Eisenberg, a former member of Microsoft’s Azure team and now director of Fino Consulting says it is no wonder there is confusion – SOA is simply too big of a concept. “I think that’s why it has had limited success in the enterprise,” he says. In his view, ESBs and similar kinds of technology are implementation details. “ESB is a way for services to communicate without having to know the specifics of how to contact the services,” he says. In that sense, he says, ESBs are simply an infrastructure element.

The long list of possible SOA infrastructure elements can make implementation difficult. Eisenberg says that the original “dream” for SOA was that you would build a service, you would register it, and then some other service that needed that functionality would simply “go there and say, I need that and simply connect to that service.” However, in fact, that represents a complex undertaking. In Eisenberg’s view, there is no simple “right” answer to the question of which technology is most relevant to the concept of SOA infrastructure. “Message queues are a very fundamental computer concept and services buses are also very fundamental to SOA,” he says.

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A similar take on the question comes from Mike Rosen, an industry expert in business architecture, SOA and enterprise architecture and a practice director for Business and Enterprise Architecture at the Cutter Consortium (an IT Research Firm). He says, in general, when people refer to SOA infrastructure, they mean the product platform that the SOA runs on, such as an ESB. “Occasionally, if taken from a high level business perspective, they mean the entire SOA stack, including the business services, but that would be an unusual interpretation of the term,” says Rosen. Still, “interpretation” is what’s at issue.

“While ESB is probably the most relevant, it of course depends on the context of the usage and requirements,” he adds. Further, Rosen points out that ESB and queuing are not architectural ‘practices’, but rather an implementation of the infrastructure. “Also, virtually all ESB products include queuing as an underlying capability,” he adds.

So, is there a way to parse the SOA and infrastructure concept a little further? Possibly. According to Nate Minshew, enterprise architect/principal consultant at Asynchrony Solutions, Inc., who relied on Department of Defense definitions related to SOA to provide a degree of clarity on a recent project. “In our project we built a service taxonomy so we could classify the different services to provide a mechanism to quickly identify a service based on what functional purpose it had. The taxonomy was primarily a high level category of process services.

Minshew says decisions about infrastructure were based on the same standards taxonomy. “We wanted to identify specific taxonomy and DOD had certain standards mandated from the DOD Standards Repository. A lot of those were fairly incomplete, he says. but there was room to make recommendations based on them such as SOAP 1.2, PKI standards and so on,” he explains.

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In turn, says Minshew, he hoped to get clearer definitions of infrastructure components, like “what is an ESB?” “We found that a lot of vendors market products as ESBs but what they call an ESB also has services and governance and management tools – we wanted to look for more granular pockets of technology. Our definition of an ESB was the messaging infrastructure and the ability to do composition for web services and the routing and processing that goes on,” he says.

In short, Minshew notes, infrastructure can take many forms and no one term suffices to describe it.



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