



# Understanding SaaS/cloud application integration: Tips, techniques and getting started

More organizations are adopting cloud-based applications, but very few organizations are running everything in the cloud. That means integrating cloud applications with in-house legacy applications—which can be challenge depending on the applications and organizations involved. The good news is that there are more options than ever—integrators, SaaS-specific integration tools, robust APIs that allow organizations to do all the integration themselves. This E-Book examines what you need to know to develop the right cloud application integration strategy for your organization.

In this E-Book, readers will:

- Learn what to consider when assessing how cloud apps will integrate into your current environment
- Get expert advice on selecting the best method to integrate cloud applications, including navigating the many options available today
- Learn why it's important for IT to work with the business groups to plan and prioritize cloud application integration projects – and get tips for leading a successful collaboration
- Read a case study and more background on one company that faced the cloud application integration challenge
- Get a glossary of key terms you need to know related to cloud application integration

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# Understanding SaaS/cloud application integration: Tips, techniques and getting started

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## Don't overlook data integration issues for cloud-based applications

### Don't forget data and application integration costs and other issues when considering cloud-based apps.

By Jeff Kelly, SearchDataManagement.com News Editor

The lure of cloud-based enterprise applications is easy to understand. They are quick to deploy and require no large upfront payments or infrastructure upgrades for support.

But dig a little deeper and it quickly becomes apparent that cloud-based apps are far from the uncomplicated, plug-and-play (or log-on-and-play, in this case) solutions that many software-as-a-service (SaaS) vendors want you to believe. In fact, there are considerable data and application integration factors that must be considered prior to any deployment, experts caution.

"A lot of companies get so enthralled with the eye candy, so to speak, of the user friendliness of SaaS apps [that] they underestimate the integration implications," said Jeff Kaplan, founder of and analyst at THINKstrategies, an IT consulting firm based in Wellesley, Mass.

"They are led to believe that simple APIs and Web services are going to make the integration process relatively straightforward and uncomplicated," Kaplan said. "In fact, it could be a very involved process."

That's because very few organizations have such simple data integration needs that prebuilt connectors can easily feed the data to new SaaS apps. Even in some of the simplest integration scenarios, some form of customization of data connectors is needed to accommodate customizations previously made in the source system.

If, for example, a custom field for categorizing customers—one that is unique to that particular organization—is added to a contact database, a customized data integration process will probably have to be created to accommodate it when that data is fed into a SaaS-based CRM application.

The problem only becomes more complicated the more source systems there are. A Salesforce.com deployment that integrates data from just one source, for example, will usually require significantly less data integration customization than a SaaS-based CPM deployment that relies on data from billing, accounting and CRM applications, Kaplan said.

And getting data into cloud-based apps isn't the only data integration scenario that must be considered. According to Ted Friedman, an analyst with Stamford, Conn.-based Gartner, organizations will sometimes want to extract data from SaaS-based apps to on-premise systems—from cloud-based CRM to an on-premise ERP system, for example. This will require further investment in customizing data connectors and integration software.

Then there are application integration considerations that crop up when an organization wants to share discrete data with outside parties, like suppliers or partners, or even among internal applications. In this case, organizations will most likely have to purchase a B2B gateway or other middleware to exchange, for example, purchase orders with suppliers, according to Ken Vollmer, an analyst with Cambridge, Mass.-based Forrester Research.

How much data needs to be integrated to and from cloud-based apps, and how often, also has an impact on cost, Vollmer said. Applications that require near real-time data will obviously have higher data integration costs than those that require just a one-time batch load, as in a rip-and-replace scenario.

And customization costs money and requires expertise. The paradox is that many small and mid-sized organizations are drawn to cloud-based apps because they lack the IT funds and internal expertise to deploy them in-house. But this means they also lack the in-house data integration expertise to get the most out of SaaS apps.

In those cases, organizations must be prepared to invest in a systems integrator or consultant. They should also hammer out detailed service-level agreements to ensure they are getting the required support from the SaaS app vendors, according to Gartner's Friedman.

This also goes for data quality, he said. But while SLAs can help meet data quality requirements, they don't remove the responsibility for the state of data from the customer, he said.

"You can't hold a provider of cloud applications entirely responsible for data quality," Friedman said. "Your people have to manage the data quality the right way."

The bottom-line for any organization considering cloud-based enterprise applications is that data integration concerns don't go away just because you've outsourced application hosting to a third party, so be prepared for the hard work and expenses that lie ahead.

"One of the myths or misconceptions about SaaS is that one size fits all and that you don't need to make changes, and more importantly, you can't because it's one template ... and very inflexible," THINKstrategies' Kaplan said. "That's just not the case."

## How to choose a data integration approach for cloud-based applications

### Get expert tips for choosing the best data and application integration methods for cloud-based applications.

By Jeff Kelly, SearchDataManagement.com News Editor

Once an organization has decided to tap a cloud-based or software-as-a-service (SaaS) application, it must decide which data integration and application integration approaches or methods to use. It's not as easy a decision as it might seem.

Different applications have different data and application integration needs, said Ted Friedman, an analyst with Stamford, Conn.-based Gartner. Depending on the circumstances, standard data connectors supplied by the SaaS application vendor might suffice, or multiple customized data integration tools and middleware could be needed. "It might be easy enough to use connectors for a flat file format, if you have simple needs," Friedman said. "But when they get more complex, like the need to do more real-time integration, then you probably need to look to more mature integration tooling."

Friedman and other industry analysts have a number of tips for organizations evaluating their data and application integration alternatives. They are:

1. Evaluate the prebuilt data connectors offered by your SaaS application vendor. Many offer data and application connectors to the more popular ERP apps and transactional databases. These are only useful, however, in the simplest of integration scenarios, where the on-premise source systems have little customization, Friedman warned.
2. If the SaaS application vendor's data connectors will not suffice, next look to your incumbent data integration vendor. Many traditional, on-premise data integration vendors, including Informatica and IBM, now offer tools designed specifically to connect data and apps to the cloud, Friedman said. Also, since the incumbent vendor already understands the integration infrastructure, it will probably have an easier time aligning new integration tools with your existing ones.
3. In most application integration scenarios, B2B gateways, also called middleware, will be needed, according to Ken Vollmer, an analyst with Cambridge, Mass.-based Forrester Research. In these scenarios, B2B gateways exchange discrete, specific data—as opposed to large volumes of data—like purchase orders or product specs between applications. The destination applications might be in-house or outside the firewall at suppliers and partners.
4. Another option is cloud-based data integration tools. Like other SaaS applications, cloud-based data integration tools are housed and managed by the vendor. No on-premise deployment or hardware upgrades are needed by the customer. Like prebuilt data connectors from SaaS application vendors, cloud-based data

integration tools have been developed to connect to a variety of on-premise and cloud-based applications. They can be more easily customized to meet more complex integration needs, however, and could be a good fit for organizations with a largely cloud-based IT infrastructure.

5. Finally, recognize that in many cases, multiple data and application integration approaches will be needed. Customized SaaS data integration tools might be needed to feed your cloud-based application, for example, while a B2B gateway might also be required to share discrete data with business partners, according to Jeff Kaplan, an analyst with THINKstrategies in Wellesley, Mass. Be sure to consider all the costs associated with using applications in the cloud, including data and application integration costs, before making any commitments.

## **Business users can no longer ignore the integration demands of SaaS**

**Business users, who for years used SaaS applications as a way to sidestep IT, had better start paying attention to integration if they want to get more from their tools.**

By Barney Beal, SearchDataManagement.com News Director

For years, Software as a Service (SaaS) applications were the domain of the business user. Freed from the constraints of IT, a vice president of sales could subscribe to Salesforce.com, or an HR director could sign up for Workday.

And as isolated, niche applications, SaaS tools served their purpose -- they were up quickly, they were easy to use and there was no huge up-front capital investment.

Then the bill came due.

Once the SaaS applications were in place, users came to like them and to want more from them. They wanted access to more data from other systems. That meant IT suddenly needed to find a way to integrate SaaS applications with one another and with legacy, in-house systems.

While SaaS-based vendors have bolstered their APIs and connectors to large, legacy systems like SAP, and while a new breed of SaaS integration vendors has emerged to fill in the holes, integrating SaaS data remains a difficult endeavor. And, according to experts, it is not something business can now simply hand off to IT. It needs to remain involved.

"Typically the situation is, people buy SaaS the way they bought best-of-breed applications," said Ray Wang, partner at San Mateo, Calif.-based Altimeter Group. "They have a specific problem and want [SaaS applications] integrated into whatever their back-end system is. As you add a bunch of SaaS applications, the question is, 'How does this fit together with my business processes?'"

Ideally, according to Jeff Kaplan, managing director of Wellesley, Mass.-based THINKstrategies, SaaS application buyers would consider integration before they make a purchase.

"Up until now, the primary concerns were the security and reliability of SaaS," Kaplan said. "More and more, people are recognizing those hurdles are far easier to overcome than integration questions, which have more unique ramifications within each organization. Before people adopt a specific SaaS solution, based on say a 30-day trial, what they have to consider is how that application is going to be integrated into specific workflow and legacy applications and the data source environment."

Of course, technology rollouts very seldom go ideally. Most organizations have neither the time nor the resources to make long-term strategic decisions about integration when they launch SaaS applications. Despite the advances in application implementation, organizations still need to bring together IT, business and any systems integrators they may use.

"The more things change, the more they stay the same," Kaplan said. "The same three parties need to be working together just like in the old days."

As with on-premise applications, it is incumbent on the business side to ensure that the customer record is the same across all applications, according to Wang.

"The standard data integration problems come up again," he said. "You still need really good business architects that can identify the issues up front. This is why the business side needs to get involved. You still need an architect and need to map out what are the important data values and analytics you're trying to measure."

Along with some of the familiar integration concerns that come with SaaS, companies also need to worry about data quality, Kaplan warned. SaaS integration tends to uncover the dirty data in an organization and compounds integration issues because SaaS integration requires data migration as well.

And while businesses can look to the past and their experience with on-premise application integration for guidance, the good news is that SaaS integration is easier.

"The good news is—the way I like to describe it—there's a shorter distance between the dots," Kaplan said. "Even though there are new data sources and applications that need to be integrated because of APIs, Web services and other de facto standards or best practices, it is possible to get the job done more quickly and cheaply than in the past."

The SaaS integration vendors have done a good job of making it easy to tie into back-end financial systems, but SaaS-to-SaaS integrations with different data or process models present a challenge, according to Wang.

In addition to advances by SaaS vendors, a new set of integrators and consultants have emerged around SaaS integration. Organizations need not turn solely to the old systems integrators.

"There is certainly a growing segment in the market who recognize these newer players are more in tune [with the] challenges of integration but also the expectations of the business side," Kaplan said. "They're going to get the job done as quickly and cost effectively as possible, as opposed to the old guard, who would send an army in and camp out as long as possible."

Yet, for all the advances in SaaS architecture, integration and the community around it, businesses still need to do the process work, experts advise. Business leaders need to be the ones determining what information gets shared—be it between employees, customers, partners or suppliers.



"That's the heart of the question," Wang said. "If you don't know what data you want to share, that becomes difficult. Why do you want to share information? What information—KPIs, dashboards? That's the information people need. So you start with the information that people need and work back through the processes."

There is a new integration issue for SaaS applications, however. More is expected of them.

"These new applications are being designed in a way that they're expected to be used in mobile devices as well as a lot of dynamic environments where they're going to touch a lot of other applications and data sources," Kaplan said. "There is inherently a tremendous amount of integration required to make them work optimally."

## Case study: DirecTV's SaaS CRM integration

### Learn how DirecTV tied its SaaS CRM applications together with the rest of the organizations IT infrastructure.

By Barney Beal, SearchDataManagement.com News Director

The challenge that confronts Erik Walters, program manager for business solutions in the sales operations division of DirecTV, is one that confronts many organizations that have invested in CRM via Software as a Service (SaaS)—integration.

DirecTV began running Oracle CRM On Demand before it was even called Oracle CRM On Demand. DirecTV signed up for the service when the product still fell under the Siebel umbrella. That dates back more than two years, and DirecTV has yet to integrate Oracle CRM On Demand with the rest of the organization.

But that is changing. Like many companies seeking to extend and better leverage their CRM investment, DirecTV is beginning to look at integrating Oracle CRM On Demand with other systems.

That's not purely an IT project, analysts warn.

"What typically happens with SaaS integration is the big issue starts out with data: Is it consistent? Can I use the existing legacy systems?" said Ray Wang, partner at Altimeter Group, a San Mateo, Calif.-based consultancy. "Then the conversation turns to process, and that's where a lot of the issues start to arise."

In many cases, the business side of the organization brought in SaaS CRM without much input from IT. In fact, because of its low start-up costs and easy deployment, SaaS CRM was frequently a way for people like the vice president of sales to circumvent IT and get an application up and running on his own. However, now that it's in place, that doesn't mean they can simply turn to IT and tell them to hook up the system to the rest of the organization. Business needs to stay involved.

"This is really all around an information supply chain—what's important and what information do they need?" Wang said. "The business leaders need to start with what information they need and what questions they need to ask. So, when we're thinking about integration, it's not just technical and not just business. The value is in analytics—how many days does it take to make a product or how well do we do in average deal size per customer?"

At DirecTV, sales operations is running the sales force automation tool, and as IT is evaluating its strategic architecture plans, it's turning to sales for insight into how SaaS fits into the picture.

"We were definitely engaged prior to this, but I don't think [IT] really understood," Walters said. "It's been an education process for us."

There has been a growing acceptance and understanding of SaaS by IT in recent years, according to Bill Band, principal analyst with Cambridge, Mass.-based Forrester Research.

"IT organizations across many industries are starting to embrace SaaS," he said. "In particular, large organizations are doing an about-face and starting to adopt SaaS as a primary strategy. The two things that were concerns were security and integration. People have become a lot more comfortable with the security standards, and SaaS providers like Salesforce and Oracle OnDemand, even Microsoft, have been coming out with more integration capabilities. More APIs, more releases to answer the integration question. Some of the integration [that] organizations thought they needed they [now] find they didn't really need. SaaS vendors have beefed up integration with newer releases. Implementers have come out with integrator solutions."

The desire for integration with more systems has many drivers, Band said. For example, as organizations strive to put more information in the hands of sales and customer service people, that requires more from the ordering systems.

In some organizations, the process of integrating SaaS CRM is helping business understand some of the havoc they wreak on their IT staffs, according to Wang.

"We see a lot of cases where business says, 'We hit the limits of the system. It does everything we need, but we need to tie this back [to other systems],'" Wang said. "The IT side may say, 'Look, there are five divisions doing the same thing with four systems, but they each work a little differently.'"

The SaaS integration challenge is similar to some of the challenges companies that bought best-of-breed applications faced in tying together data and systems, Wang said. But for DirecTV and other Oracle customers, there are some different factors involved. In Oracle's case, its applications use the same data model. So the processes may be slightly different and need to be harmonized across on-premise and off-premise and across different modules.

"Vendors using different data models typically encounter some challenges, but the process models are what's more important," Wang said. "This is going to be more important as we start encountering hybrid deployment scenarios. Most of the innovation is being delivered by SaaS vendors or vendors with SaaS deployment options."

DirecTV has spoken with Oracle and on-demand integration partners about the project.

"Web services seem to be the No. 1 item right now," Walters said. "The only challenge we have right now is [that] On Demand cannot call out. If we could call out, we could do things much more integrated from here. It prevents us from being able to do ad hoc changes and updates. You don't want to go change millions of pieces of data if you don't need to."

So where should a company that needs to begin integrating SaaS CRM start?

"Anywhere," Wang said. "The easiest place to start is with the analytics. That's really where the value of these large systems is. Can I grow this business? Are we meeting their needs? For any process like campaign to lead, order to cash, incident to resolution, we want to know what the status is, the granularity, and define the customer model effectively."

## Must know terms: SaaS and cloud computing glossary

### Here are key terms to know when navigating SaaS application integration projects.

Compiled by Meghan Kelly, SearchCRM.com Associate Editor

**Software as a Service (SaaS):** Software as a Service (SaaS) is a software distribution model in which applications are hosted by a vendor or service provider and made available to customers over a network, typically the Internet.

SaaS is closely related to application service providers (ASPs) and on-demand computing delivery models. **ASP** refers to a company that offers individuals or enterprises access over the Internet to applications and related services that would otherwise have to be located in their own personal or enterprise computers. **On-demand computing** refers to an enterprise model in which computing resources are made available to the user as needed. The resources may be maintained within the user's enterprise or made available by a service provider.

SaaS is also related to **hosted CRM**, an arrangement in which a company outsources some or all of its CRM functions to an ASP. The hosted CRM model is said to increase ROI by decreasing costs and allowing a company to focus more resources on its main business areas.

**Cloud computing:** Cloud computing is a general term for anything that involves delivering hosted services over the Internet. These services are broadly divided into three categories: Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS). The term "cloud computing" was inspired by the cloud symbol that's often used to represent the Internet in flowcharts and diagrams.

A cloud service has three distinct characteristics that differentiate it from traditional hosting. It is sold on demand, typically by the minute or the hour; it is elastic—users can have as much or as little of a service as they want at any given time; and the service is fully managed by the provider (the consumer needs nothing but a personal computer and Internet access). Significant innovations in virtualization and distributed computing, as well as improved access to high-speed Internet and a weak economy, have accelerated interest in cloud computing.

**Ajax:** Ajax (Asynchronous JavaScript and XML) is a method of building interactive applications for the Web that process user requests immediately. Ajax combines several programming tools including JavaScript, Dynamic HTML (DHTML), Extensible Markup Language (XML), Cascading Style Sheets (CSS), the Document Object Model (DOM), and the Microsoft object XMLHttpRequest. Ajax allows content on webpages to update immediately when a user performs an action, unlike an HTTP request, during which users must wait for a whole new page to load. Ajax is not a proprietary technology or a packaged product. Web developers have been using JavaScript and XML in combination for several years.

**Apex:** Apex is a development platform offered by Salesforce.com for building third-party SaaS applications on top

of Salesforce.com's CRM functionality. Apex applications are hosted by Salesforce.com and include an API that developers can use to access data from Salesforce.com, a Builder that allows for easy customization, and a native programming language called Apex Code.

**Application integration:** Application integration (sometimes called enterprise application integration or EAI) is the process of bringing data or a function from one application program together with that of another application program. Where these programs already exist, the process is sometimes realized by using middleware, either packaged by a vendor or written on a custom basis. A common challenge for an enterprise is to integrate an existing (or legacy) program with a new program or with a Web service program of another company.

**Application programming interface (API):** An application programming interface is a set of standards for a software program that can be defined by the developer. The API defines the way a developer should request services from a specific program and allows a programmer writing an application program to make requests of the operating system or other applications. Some SaaS CRM vendors have established APIs for integrating their applications with the user's in-house applications.

**Cloud backup:** Cloud backup, also known as online backup, is a strategy for backing up data that involves sending a copy of the data over a proprietary or public network to an off-site server. The server is usually hosted by a third-party service provider, which charges the backup customer a fee based on capacity, bandwidth or number of users. In the enterprise, the off-site server might be proprietary, but the chargeback method would be similar.

In the enterprise, cloud backup services are being used primarily for archiving non-critical data only. Traditional backup is a better solution for critical data that requires a short recovery time objective (RTO) because there are physical limits to how much data can be moved in a given amount of time over a network. When a large amount of data needs to be recovered, it may need to be shipped on tape or some other portable storage media.

**Hybrid cloud:** A hybrid cloud is a cloud computing environment in which an organization provides and manages some resources in-house and has others provided externally.

**Infrastructure as a Service (IaaS):** This is a provision model in which an organization outsources the equipment used to support operations, including storage, hardware, servers and networking components. The service provider owns the equipment and is responsible for housing, running and maintaining it. The client typically pays on a per-use basis.

IaaS is one of three main categories of cloud computing service. The other two are Software as a Service (SaaS) and Platform as a Service (PaaS). IaaS is sometimes referred to as Hardware as a Service (HaaS).

**Integration connector:** This is a software program that lets users map data from one application to another. Many SaaS CRM vendors provide pre-built integration connectors that allow users to load data from other sources into the SaaS application.

**Multi-tenancy:** This term means that multiple companies are using a single, remotely hosted database. Every

organization's customer data is stored in the same database and kept separate. While multi-tenant SaaS CRM applications tend to be less expensive, many companies worry about the security of their customer data in a shared database.

**On-demand CRM:** On-demand CRM is constructed around what is called a multi-tenant architecture—i.e., many clients can run off a single instance of the applications/services that reside on a server at a remote site. On-demand applications are ordinarily accessed via the Web.

**Platform as a Service (PaaS):** Platform as a Service (PaaS) is a paradigm for delivering operating systems and associated services over the Internet without downloads or installation. PaaS is sometimes called "cloudware" because it moves resources from privately owned computers into the Internet "cloud." PaaS is an outgrowth of Software as a Service (SaaS), a software distribution model in which applications are hosted by a vendor or service provider and made available to customers over the Internet.

**Private cloud:** Also referred to as an internal cloud or corporate cloud, this is a marketing term for a proprietary computing architecture that provides hosted services to a limited number of people behind a firewall.

**Public cloud:** A public cloud is one based on the standard cloud computing model, in which a service provider makes resources, such as applications and storage, available to the general public over the Internet. Public cloud services may be free or offered on a pay-per-usage model.

**SaaS ERP:** This is a hosting model for enterprise resource planning (ERP) software. In a SaaS model, a firm's ERP software applications reside on a vendor's servers. The goal of SaaS ERP hosting is to reduce the costs of software, hardware and support.

**Single-tenancy:** This term means that each customer is provided with a dedicated database, middleware and application instance. Since single-tenancy provides customers with their own private database, single-tenant SaaS CRM applications are often the choice of companies with sensitive customer data.

**SOA:** A service-oriented architecture (SOA) is the underlying structure supporting communications between services. SOA defines how two computing entities, such as programs, interact in such a way as to enable one entity to perform a unit of work on behalf of another entity. Service interactions are defined using a description language. Each interaction is self-contained and loosely coupled, so that each interaction is independent of any other interaction.

**Web services:** Also referred to as application services, these are services (usually including programming and data) provided by an application service provider (ASP) that are made available to users over the ASP's Web server. On-demand CRM is an example of a major service offered as a Web service.

## Resources from Boomi



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### **About Boomi:**

Boomi is the market-leading provider of on-demand integration technology and the creator of AtomSphere, the industry's #1 Integration Cloud™. AtomSphere connects providers and consumers of SaaS and on-premise applications via a pure SaaS integration platform that does not require software or appliances. ISVs and businesses alike benefit by connecting to the industry's largest network of SaaS, PaaS, on-premise and cloud computing environments in a seamless and fully self-service model. Leading SaaS players such as salesforce.com, NetSuite, Intuit, Marketo, Taleo, and Zuora rely on AtomSphere to accelerate time to market, increase sales, and eliminate the headaches associated with integration. Recent Boomi awards include the SIIA CODiE for Best On-Demand Platform; the AlwaysOn East 100; the AlwaysOn Global 250; and the JMP Securities Hot 100. For more information, visit [www.boomi.com](http://www.boomi.com).