Integrating SaaS Applications

A SnapLogic White Paper

August 2008

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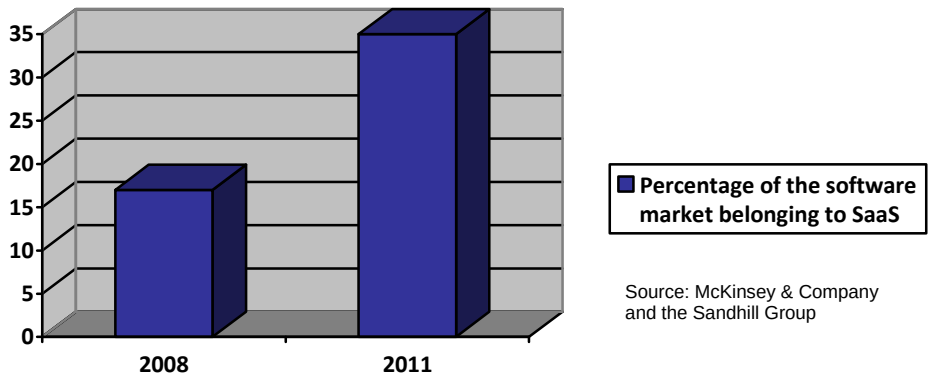
The Growth of SaaS

The Software-as-a-Service (SaaS) market is growing rapidly. Companies of all sizes are turning to hosted applications for sales force automation (SFA), customer relationship management (CRM), accounting, and human resources (HR) management. A recent survey of over 850 enterprise software customers confirmed that SaaS has established a strong foothold in corporate IT:

- Companies with more than 1,000 employees are spending 11% of their software budget on SaaS.
- Companies with more than 100 and fewer than 1,000 employees are spending 17% of their software budget on SaaS.
- Companies with fewer than 100 employees are spending 26% of their software budget on SaaS.
- Overall, 74% of respondents would **prefer** to use some form of a SaaS platform in their operations.[1]

As impressive as these numbers are, they're going to get bigger. Gartner predicts that the SaaS portion of the software market will grow at twice the rate of the software market overall through 2011.[2] By then, according to McKinsey & Company, SaaS will consume 35% of annual software budgets.



Source: McKinsey & Company and the Sandhill Group

[1] *Enterprise Software Customer Survey 2008*, Sandhill Group, McKinsey & Company,

[2] "Gartner predicts strong interest in SaaS," *Computerworld*, 20 August 2007, http://computerworld.co.nz/news.nsf/mgmt/DD87FF9423278B2ECC25733A0016CDE3

The undeniable success of companies such as Salesforce.com—now serving 41,000 customers and generating $1 billion in annual revenue—demonstrate the viability and importance of SaaS computing. SaaS is part of a larger movement to migrate internal IT functions to “the cloud”—remote data centers managed by third parties such as Amazon.com, Google, and Salesforce.com.

Why SaaS?

What's behind the stampede to SaaS?

SaaS offers important benefits in the areas of operational costs and business agility. These benefits are especially compelling to small organizations that have limited IT budgets and staff. But even larger organizations appreciate the extent to which SaaS can deliver the following benefits:

- **Faster deployments**
  Most SaaS applications enable users to be up and running within minutes of signing up for a service. Instead of purchasing and installing hardware, then installing and configuring software, customers simply access a Web portal, create an account, and start using an application.

- **Lower costs**
  SaaS eliminates capital expenses for local hardware and the operational costs of maintaining that hardware. Another advantage is that in many organizations SaaS subscriptions are treated as operational expenses, leaving valuable capital expense budgets available for purchases of items that cannot be outsourced as a service.

- **Ease of use**
  Most SaaS applications run in Web browsers, and a growing number of them take advantage of Web 2.0 interfaces, making them highly responsive, easy to use, and even a little fun.

- **Universal, secure remote access**
  Globalization, off-shoring, and mergers and acquisitions have resulted in project teams being distributed in different geographic locations. At the same time, the number of workers telecommuting from home as increased. SaaS applications, which are securely available over the Internet from any location, support distributed workforces, especially workforces comprising individuals from different organizations, more easily than do traditional applications running behind a firewall.

The Need for SaaS Integration

Of course, SaaS doesn't solve all IT problems, and it creates some of its own. Forrester Research has identified integration as the biggest inhibitor to the adoption of SaaS, especially among SMBs.[3]

Companies of all sizes recognize that they need to integrate the data stored in applications, whether those applications are running locally or in the cloud. For example, a company will want to avoid error-prone manual reentry of orders from its SaaS CRM system into its SaaS financial system. Or a company using two SaaS applications, such as Sugar On Demand for CRM and QuickBooks Online for accounting, might need to correlate sales performance to commissions paid. A recent study by Saugatuck Technology found that 17% of SMBs are already using two or more SaaS applications. Large enterprises are adopting multiple SaaS applications, as well. Integration among SaaS applications will become an increasingly common challenge for IT organizations of all sizes.

Other models of SaaS integration need to be supported, as well. Almost certainly, an organization is storing some of its key data locally behind the firewall. Many organizations are reluctant to trust all their data, especially financial data, to SaaS applications. Government agencies and companies in many regulated industries are subject to legal restrictions forbidding or severely limiting the external storage of confidential data; accordingly, these agencies and companies will always store at least some of their vital data internally. With data distributed among SaaS applications and internal IT resources, these organizations need a way to integrate data and applications across the firewall, while adhering to stringent security policies and maintaining regulatory compliance.

[3] "SaaS, SMBs, and the S Curve," *IT BusinessEdge*, March 18, 2008, http://www.itbusinessedge.com/item/?ci=40060

Another type of internal integration involves the growing popularity of knowledge management and social networking platforms such as Microsoft SharePoint and MindTouch Deki. Impressed by early studies showing improved communication and increased productivity, many companies are pushing to make social networking platforms, wikis, and blogs the primary collaboration tools for employees. Following the example of portal dashboards from a few years ago, many of these platforms can be configured to pull in data from databases and applications, offering employees a "window" into the status of relevant business operations. For example, it might be useful for a shipping department to know the status of pending sales. If that sales data is held in a SaaS CRM application, then the internal social networking platform needs access to the SaaS application.

The technical challenge of integrating SaaS applications with one another or with internal resources is daunting to companies of all sizes. In large part, the challenge results from SaaS applications having complex, even arcane, programmatic interfaces that require advanced programming skills.

Requirements for SaaS Integration

Any systematic solution for integrating SaaS applications must be able to meet the following requirements:

Table 1: The requirements for a SaaS integration solution.

Requirement	Comments
Simplicity	Most popular SaaS applications feature SOAP Web services interfaces for exchanging data with other applications. SOAP and the related WS-* Web services standards were designed to provide secure, reliable software services, but they're difficult to use—so difficult that sometimes even the SaaS vendors themselves have trouble using them when working on integration projects with customers. A SaaS integration solution needs to provide comprehensive support for these application interfaces, while providing a simpler, more approachable programming model that makes SaaS integration practical for large numbers of customers and system integrators.
Extensibility	SaaS applications and SaaS application interfaces are changing continually. An organization's integration needs may change continually, too, as a result of new technology being brought online and new business initiatives. A SaaS integration should be extensible, capable of supporting current and future applications. It should feature a plug-in architecture, so that new features and interfaces can be added incrementally, without requiring a major release or re-deployment of the technology.
Ease of use	Custom integration programming is beyond the technical reach of most SMBs. Even in large organizations, experienced SOAP programmers are a minority, and they're usually tasked with working on major new initiatives. While supporting SOAP, a SaaS integration solution must be easy to use and within the technical reach of SMBs, system integrators, and department IT personnel in large enterprises. It should make use of the latest advances in software UI, support common "desktop" functions such as search, drag-and-drop, etc.
Flexibility in deployment	SaaS to SaaS integration might run entirely as a hosted operation. Other integrations might require some code running internally behind the firewall. A SaaS integration solution must have a flexible architecture that supports deployment in the cloud or behind the firewall, depending on where it's needed and makes the most sense.

Requirement	Comments
Security	Because valuable business data will be flowing through the integration solution, it must be secure. Connectors to applications should require authentication and support common security measures such as SSL.
Reusability	Integration is rarely a one-time job. It's a job that's done over and over, with minor or major variations. Integration work done for a single application should benefit future uses. A solution that lends itself to reuse is a better integration solution that one that is overly rigid and difficult to modify.
Consistent with the philosophy and benefits of SaaS	SaaS integration complexity cannot overwhelm the benefits of adopting SaaS in the first place. A SaaS integration solution that takes 6 months to deploy erodes the value of a SaaS application that was adopted because users could be up and running in a few days. SaaS integration solutions must be able to be quickly deployed, affordable, and flexible.

The SnapLogic Solution for SaaS Integration

SnapLogic offers an open source data integration framework that addresses the challenges of SaaS integration. The SnapLogic framework features a server that runs data integration tasks. The server also features a repository of reusable resources for performing actions such as extracting data from a SaaS application's SOAP interface, writing data to a database, formatting data, joining data from two sources, and more. Users combine resources into sequences called pipelines that perform specific tasks.

Figure 1: SnapLogic helps organizations integrate SaaS applications with other applications and data stores.

Simple, Familiar Web Interfaces

One of the important design characteristics of the SnapLogic framework is that every component has a uniform interface. This uniform interface hides the complexity of application interfaces, providing an integration solution based on the simple principles of the Web and simplifying the work of SaaS integration for IT engineers.

Browser-based Design Tool

Making the work of data integration even easier is SnapLogic's browser-based design tool, SnapLogic Designer. The Designer enables users to drag and drop resources onto a canvas, creating custom pipelines. Instead of working with raw XML interfaces, IT engineers can assemble and configure pipelines in an easy-to-use browser tool.

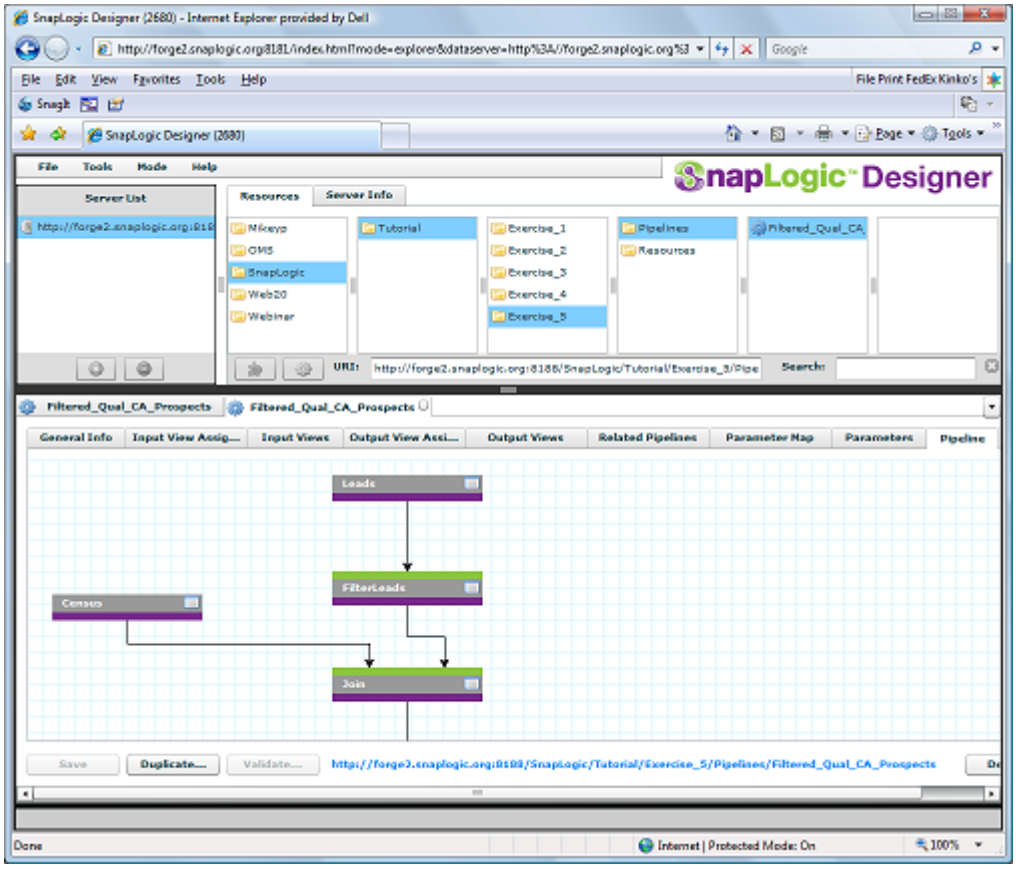


Figure 2: SnapLogic Designer, the framework's browser-based design tool, makes it easy to create custom integration solutions.

Searchable Repositories of Resources

Each SnapLogic Server includes an extensible library of standard interface and transformation components that enable users to quickly build resources for virtually any integration need. Resources are stored in searchable repositories, so they can be easily discovered and accessed by engineers building integration solutions.

The table below lists SnapLogic's interface and transformation components.

Table 2: SnapLogic's standard interface and transformation components.

Interface Components (Connectors)	Transformation Components
Database Readers (for Oracle, MySQL, etc.) Database Writers RSS Readers RSS Generator XML Reader XML Writer CSV Reader CSV Writer Fixed Width File Reader Fixed Width File Writer	Join Sort Filter Lookup Aggregate Merge Mixer Sequence Generator Type Converter Date Dimension User Defined Computations

Ready-to-use Resources for Integrating Popular SaaS Applications

In addition to offering the standard connection and transformation components listed above, SnapLogic offers Solutions Packs for popular SaaS applications such as Salesforce.com and Sugar On Demand. Each Solution Pack features ready-to-use resources for accessing all the data objects and performing all the operations supported by the application. Rather than calling operations and accessing data objects through complex SOAP interfaces, programmers can simply open SnapLogic Designer, then drag and drop resources on to the design pane in the browser. Eliminating the need for custom programming puts SaaS integration within reach for the largest number of SMBs, enterprises, and system integrators.

For example, SugarCRM features a data object called Accounts, which stores information about customer accounts. The SOAP WSDL for SugarCRM defines the operations (such as read and update) that can be performed on that data object. Instead of writing Java code to call the read operation on the Accounts object, a programmer can drag the read resource for Accounts onto the design pane, configure it, and connect it to other resources in a pipeline.

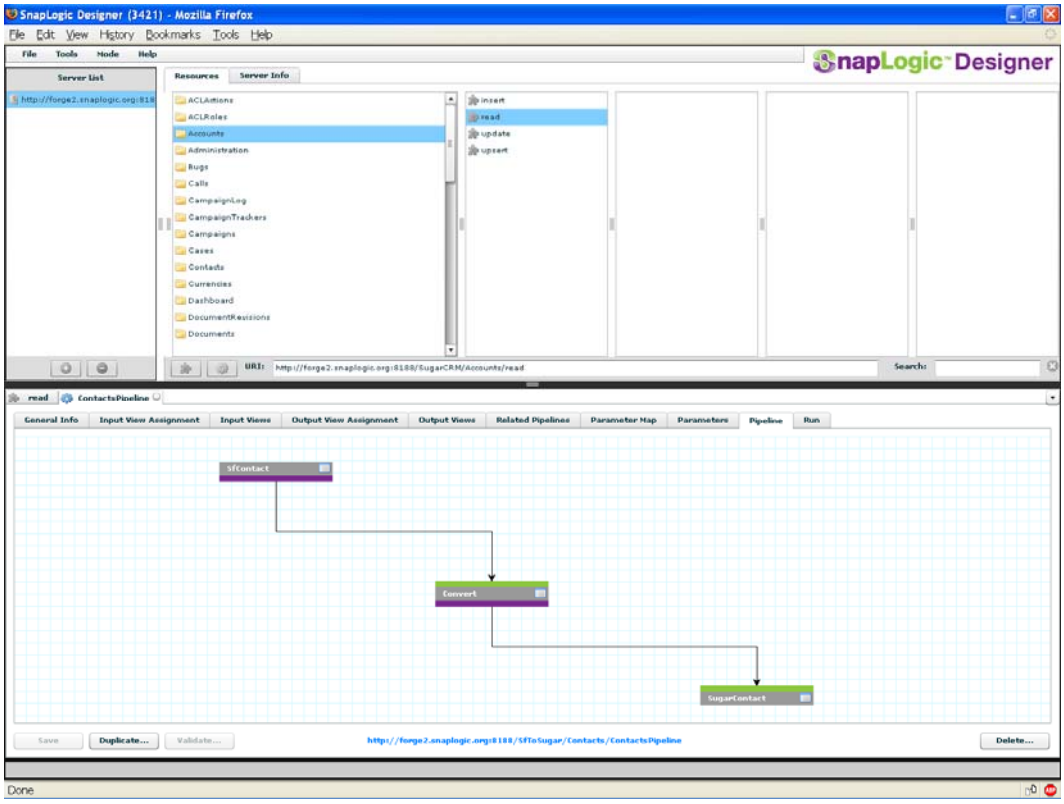


Figure 3: The SnapLogic Solution Pack for SugarCRM includes folders for every data object in SugarCRM. Within each folder are resources for all the operations, such as read and update, which the application supports for that data object. To build a data integration pipeline, programmers can simply drag resources for the operations they want onto the design pane. In the example above, a programmer has created a pipeline to read Contacts from Salesforce.com, convert them to the format used by SugarCRM, and then write them to SugarCRM.

Flexible "Anything Anywhere" Architecture

SnapLogic's flexible "Anything Anywhere" Architecture allows IT to place connectors and processes wherever they are needed: in the cloud, behind the firewall, or in a distributed combination of the two. This flexibility is important for several reasons:

- It supports more efficient implementations, eliminating unnecessary network hops between local data centers and services running in the cloud. Functions can be placed where they make the most sense. The integration solution itself doesn't straightjacket programmers into an all-local or all-SaaS solution.
- It enables organizations to deploy integration functions in the DMZ, bridging public Internet access and secure IT assets behind the firewall, if appropriate for security and compliance policies.

- It enables organizations to manage pipelines and connectors locally, if necessary for security and compliance. For example, pipelines that access confidential healthcare data can be run and monitored behind the firewall.
- It enables organizations to run integration workloads in the cloud, taking advantage of the low cost and scalability of cloud computing.
- It makes SnapLogic extensible to integration projects that do not involve SaaS at all. This flexibility means that organizations don't have to invest in two integration technologies: one for SaaS and one not.

Because SnapLogic pipelines run over Web interfaces, they are firewall-friendly and can be managed and secured by an organization's existing Web infrastructure.

Meeting SaaS Integration Requirements

The table below summarizes the ways in which the SnapLogic data integration framework meets the requirements for SaaS integration.

Table 3: How SnapLogic meets the requirements for SaaS integration

Requirement	Comments
Simplicity	The SnapLogic framework features application-specific Solution Packs that provide drag-and-drop resources for all the methods for all the data objects in a SaaS application, even complex applications such as Salesforce.com and Sugar On Demand. It also includes a generic SOAP Web services connector, as well as connectors for common data sources such as databases, CSV files, and Web pages. Instead of having to make sense of long XML documents, programmers can assemble data integration pipelines in a graphical tool that eliminates the complexity of traditional SOAP Web services programming.
Extensibility	SnapLogic's open source framework makes it easy for programmers to add new components and custom resources. Existing resources and pipelines can be easily modified, as needed, either through SnapLogic Designer or through Python. Adding resources to an existing server is as easy as copying files to a folder.

Requirement	Comments
Ease of use	Rather that work with long XML documents and complex Web services development tools, engineers can build and configure SaaS integration solutions with SnapLogic's easy-to-use, browser-based design tool, SnapLogic Designer. Further customizations can be written in Python, a powerful, easy-to-use programming language that's becoming increasingly popular in the world of cloud computing.
Flexibility	SnapLogic's "Anything Anywhere" Architecture enables engineers to put connectors and transformation logic wherever they're needed—behind the firewall, in a branch office, or in the cloud. The placement and configuration of servers can be tailored to meet business rules and logistical requirements.
Security	SnapLogic features built-in user authentication, access controls, and secure connections, enabling IT organizations to implement flexible security models. In addition, because SnapLogic uses Web interfaces for all its resource and pipeline communications, access to SnapLogic pipelines can be secured using an enterprise's existing Web security infrastructure. For example, access to pipelines can be controlled through an organization's existing Web authentication or single sign-on framework, and SnapLogic data can be protected with SSL.
Reusability	SnapLogic resources and pipelines can be reused, recombined, and copied from one server to another.
Consistent with the philosophy and benefits of SaaS	SnapLogic's model of "Really Simple Integration" enables programmers to create and deploy integration solutions in a fraction of the time required for traditional, hand-coded, point-to-point solutions.

Conclusion

SaaS applications offer important benefits to businesses of all sizes, including rapid deployment, ease of use, and lower capital expenses. As organizations move more of their operations to SaaS applications, they will need a flexible, scalable solution for integrating data inside and outside the firewall.

The SnapLogic data integration framework, with its server, resource repository, Web interfaces, and ready-to-use solution packs, offers SMBs and large enterprises an affordable, easy-to-use solution for SaaS data integration.

For more information about SnapLogic, please visit www.snaplogic.com.