Force.com Connect:
Five Paths to Integration Success

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Executive Summary

As the leader in on demand services, salesforce.com has helped thousands of customers reduce the risk, cost, and project timelines associated with traditional enterprise software. With Force.com Connect, salesforce.com fully aligns with a fundamental shift towards a world in which the Web *is* the platform. In the process, salesforce.com continues to deliver on its mission to help IT departments simplify the delivery of business applications.

Composed of five mix-and-match integration solutions, Force.com Connect minimizes the risks of integration and lets businesses take full advantage of existing IT investments, at minimal effort and expense. Thousands of customers integrate Salesforce solutions every day with hundreds of different endpoints, including legacy, custom, and packaged applications from SAP, Oracle, and Microsoft. Having data dispersed across departments, systems, and individual desktops is one of the most common and vexing challenges organizations face as they seek to transcend the data silos that drag down user productivity, process efficiency, customer satisfaction, and ultimately the bottom line.

According to a recent IDC study of 100 C-level executives, application integration remains the #1 IT goal. And according to Gartner, "application integration accounts for nearly 35 percent of the total cost of design, development, and maintenance in a typical enterprise—regardless of whether the company is small, medium, or large." These findings highlight the strategic importance of integration. They also hint at the difficulties and expense associated with traditional integration efforts between proprietary systems. Because past integration efforts typically resulted in tightly coupled point-to-point connections or required complex middleware solutions, the resulting integration solutions were difficult or impossible to change.

With Force.com Connect, salesforce.com provides better, easier options for integration with Web services, enterprise applications, desktop applications, and other applications such as CTI telephony solutions. The Beagle Research Group supports this assessment: "You can't integrate unless you have an integration strategy and platform. Force.com Connect will provide a set of integration technologies that reduce integration complexity, and reduce time to value for customers." And AMR Research said it this way: "Despite the company name, salesforce.com's real core competency is its ability to cost-effectively manage huge volumes of information and transactions."

Salesforce.com's unique multitenant architecture—in which all users and applications share a single, common infrastructure and code base that is centrally maintained—is the key to creating integrations that don't break. The Force.com multitenant platform, the Force.com Web Services API, and a wide network of integration partners come together to provide the following integration benefits:

:: **Rapid time to value**: By using Force.com Connect technologies and resources, integrations now take days or weeks, not months.

:: **Simplicity**: Instead of having to support various platforms and multiple versions, salesforce.com makes available a single, platform-based API. This API provides direct, low-level access to all Salesforce applications, data, and metadata.

:: **Flexibility and choice**: Customers are free to choose those applications vendors that provide them with the best solutions, secure in the knowledge that those solutions will work together with their existing information technology environment.

:: **Proven success and predictability**: Thousands of salesforce.com customers integrate with hundreds of different endpoints every day. Today, over 50 percent of all transactions are handled via the Force.com API, amounting to over one billion integration transactions every month. As a result, all customers can benefit from proven approaches based on integration best practices, predictable integration design patterns, and the deep integration domain expertise of our partners.

Integration means having data from all systems readily accessible, being able to integrate external Web services, and connecting business processes across departments, applications, and partners. Integration makes it possible to monitor business performance in real time, dramatically increase productivity, and end IT bottlenecks. By getting all of the benefits of integration without the complexity, businesses can focus on how integration benefits their core competencies and frees IT resources to create business value.

For customers that means the end of broken integrations, intricate technology dependencies, and vendor lock in. For partners who want to become part of the on-demand ecosystem, it means that they can develop, package, and deploy a single version of their integration solution to all salesforce.com customers.

Force.com Connect: Five Paths to Integration Success

In designing Force.com Connect, salesforce.com delivers solutions that are low risk, fast, affordable, and flexible, while providing maximum choice. To meet these goals, Force.com Connect leverages a variety of technologies and an extensive partner ecosystem to provide five approaches to integration. The section "A Closer Look" provides additional details about each path.

Figure 1: Integration paths can be mixed, matched, and adjusted at any time.

These five paths embrace any integration scenario. Your organization's existing technologies, current business processes, and business goals will determine which integration approach—or combination of approaches—is best for you:

:: **Native desktop connectors** make possible rapid integration with Microsoft Outlook, Lotus Notes, Microsoft Excel, and Microsoft Word.

:: The **AppExchange marketplace** includes over 600 pre-integrated components and applications, ready to go.

:: **Native ERP connectors** provide pre-built integration to Oracle and SAP systems.

:: The **integration partner ecosystem** includes more than 31 integration technology partners to meet almost any integration need.

:: **Developer toolkits** provide the ultimate in flexibility and choice. The Force.com platform supports all major development environments and tools.

Types of Integrations

Because every integration depends on a customer's business processes and requirements, IT environment, and resources, different integration solutions are needed—a single solution rarely satisfies all requirements. Integration is as much a business decision with strategic implications as it is a technology issue. Depending on your business, your users, and your existing technologies, your integration solutions are likely to fall into one or more of the following categories. Pre-built solutions for all of these scenarios are available on the AppExchange marketplace.

:: Mashups

:: Application integration

:: Data integration

:: Data cleansing

Mashups

Mashups, sometimes called "composites," are hybrid applications created by bringing together several data sources and Web services to create a new application or to add value to an existing application. Behind the scenes, mashups may require different levels of integration, depending on whether the mashed-up data is only meant to be viewed, whether it can be edited, and whether data is actually transferred between systems.

The first mashups were those that made it possible to view data from two or more applications in a browser, without actually moving data between the applications. The most well-known example is Google Maps, which makes a wide range of applications—from real estate applications to government portals—more useful.

Such applications are examples of **client presentation mashups**, where the integration takes place strictly at the visual level. As mashups evolve, they are becoming more complex and sophisticated. **Client services mashups,** for example, may call Web services or consume Web sites and feeds, or invoke the Salesforce API from the browser to perform a step in a business process. Such mashups can be used to streamline multi-step business processes such as order management, return material authorization, or integration with eBay auctions and Google Adwords advertising campaigns. Another type of mashups is **external services mashups,** which treat Salesforce data as a client, using exposed Salesforce data and mashing it with data in an external system. An example of an external services mashup is an enterprise portal that displays Salesforce as one of many presentation portlets.
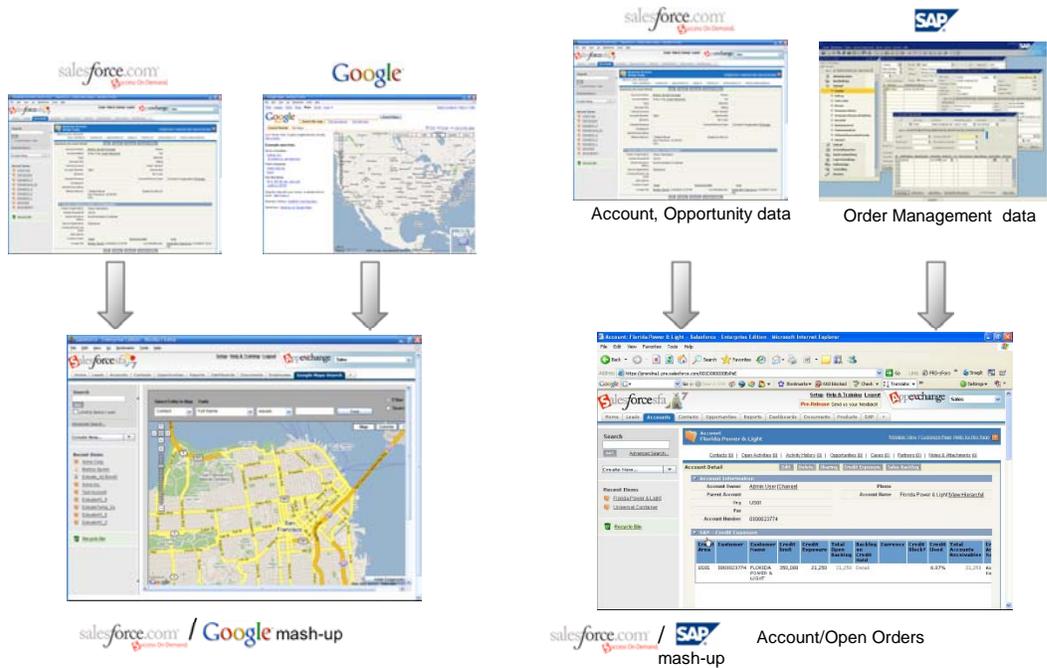

Figure 2: Integration in mashups can involve the visual, data, or logic layers; data can be displayed in Salesforce or external systems.

These categories are important in evaluating what technologies, tools, and skills you need to create mashups. Client presentation mashups require little more than HTML and JavaScript, which can be cut and pasted by non-technical users to immediately add value to an application. Hundreds of such prebuilt mashups are already available on the AppExhange marketplace. Client services mashups and external services mashups can require more complex programming and typically rely on the technologies associated with Web services.

Client presentation mashups are recommended for everyone, since they require little effort and expertise to get a quick win. Client services mashups and external services mashups may be useful to organizations that want access to information based on a business process in real time, and to those that want to easily use and reuse external services. The use of these types of mashups should be carefully evaluated.

Application Integration

In contrast to a point-to-point integration, where two applications are directly connected, application integration generally refers to using so-called "middleware" or EAI (Enterprise Application Integration) solutions to provide a more consistent approach by adding a layer of abstraction between the applications. This layer uses either messaging middleware or an application server to pass communications between applications or Web services, either in real time or in batch mode.

Application integration is evolving into service-oriented architectures (SOA) where hundreds, even thousands of heterogeneous services are combined to create end-to-end business processes. With SOA strategies, applications are broken down and abstracted as services, with well-defined APIs that provide access to the

relevant functions and data. The ability to pick and choose services based on need and performance frees the IT department from the rigidity of monolithic applications and provides a level of agility that is not possible from single-vendor applications.

Service-oriented architectures are not a new thing—the CORBA and DCOM specifications by Sun and Microsoft are based on similar concepts. However, with platform-neutral Web services that now use the Internet as a platform, this model has reached the maturity necessary to make service-based, distributed computing the future of integration. On-demand services enhance the SOA model with thousands of proven, prebuilt services that can be easily plugged into an SOA architecture. The benefits of this approach are summarized in an article by David S. Linthicum in SOA Magazine: "This does change the game of both enterprise architecture and SOA. It doesn't change the core concepts, but the fact that, as an option, you can use the key technology of on-demand through a subscription, and do so at a fraction of the buy-in price we're paying now for software and hardware we host on our own. …This could make SOA much more affordable and easier to implement."

Most middleware solutions include pre-built standard connectors for the most common packaged and legacy applications and databases, such as SAP, Oracle, JD Edwards, Peoplesoft, and Microsoft. These connectors contain the code needed to map the data formats and object models of those applications to the corresponding Salesforce data. In addition, middleware solutions usually include a framework for building new connectors, as well as tools for defining the workflow of a business process.

Application appliances are a newcomer to the integration game, but they already have an impressive track record, both in terms of time and costs. These appliances handle the standard integration tasks, including connection, transformation, simple workflow, and management at a lower cost than traditional middleware solutions.

Application integration with middleware is recommended for organizations that want to integrate legacy or existing ERP applications with Salesforce in real time, to support multi-step business processes.

Data Integration

Data integration is the process of consolidating, managing, and moving information from different data sources, including databases, data files, and applications including ERP, CRM, legacy, and data warehouses. Data integration provides a proven, cost-effective way to share data among multiple systems. In most data integration scenarios, data is moved on a regular schedule that ranges from real time to nightly or hourly intervals. Data integration is usually used in conjunction with data services that ensure data integrity, such as data de-duplication and data cleansing.

Data integration is the most popular and well understood integration scenario today. Data integration includes ETL (Extraction, Transformation and Loading) tools, replication engines, and migration engines. Many data integration tools support complex business scenarios and provide connectors to all major enterprise applications, data warehouses, and web services. Data integration is recommended for organizations that need to connect their back-office data with front-office applications such as Salesforce.

Data Cleansing

Data cleansing is good business practice generally—for integration projects, it is essential. During data cleansing, data that is incorrect, incomplete, improperly formatted, or duplicated is either corrected or deleted from the database.

Data cleansing tools systematically examine data for flaws by using rules, algorithms, and look-up tables and then take appropriate action to cleanse the database. Such tools are particularly useful for data-intensive applications such as CRM, or for applications in industries such as banking, insurance, retailing, and telecommunications. Because of the critical importance of having "clean" data in any integration project, it is recommended for everyone.

Designing and Building Integrations with Salesforce

To determine how to best approach any integration project, it is important to first fully understand your needs and options, particularly how the recent evolution of Web services may be relevant to your project. Although each enterprise integration project seems as unique and particular as the systems and businesses involved, in reality almost all use cases can be designed by considering the four main areas listed in Table 1. Understanding how each of these areas is related to your use case is the first step in designing your integration.

Questions to Ask When Designing Integrations

The table below provides a high-level overview of the types of questions you should answer in designing integrations. Of these, the business process and technology areas are typically the most complex areas in an integration.

Table 1: Architecting integrations with Force.com Connect and understanding your integration needs

Area	Description	Key Questions
Business Process	Specific processes being implemented between CRM and Accounting/ERP systems, such as order to cash or account master	What processes are required? What is the system of record?
Data Model	How the systems' different data models will be reconciled and information common to both will be managed	What data will be shared? What transformations are necessary?
Connectivity	The technologies and protocols that will be used to allow basic communications and access to the ERP side: as for Salesforce, connectivity is always via the Force.com API	What interfaces or adaptors will be used to connect to and communicate with ERP and accounting systems?
Technology	Platforms and tools used to implement the integration, such as EAI tools (e.g., TIBCO, WebMethods) or custom code (e.g., Java, .NET)	What category of tool (ETL, custom code, EAI) will be used? What specific tools and skill sets are available or required?

Web Services Change Everything

Web services have changed the integration landscape. Because Salesforce was designed from inception as a Web-based service, the Force.com platform is the optimal platform to support such services. Because all customers share the same multi-tenant platform and code base, salesforce.com was able to design the service to be available over the Web either through standard Web pages or via a standards-based, Web services API. As more companies share data with other companies and partners over the Web, salesforce.com provides a proven and effective Web-based platform to connect businesses with their extended value chains. The multitenant API allows hundreds of partners to build integrations to the Force.com platform once and make these integrations instantly available to all salesforce.com customers through the AppExchange.

In the Web services model, applications interface with each other, not with users. Using a programmatic interface across a network, Web services can share business logic, processes, and data. As a result, business processes can combine multiple applications and services that are loosely coupled (connected only when they need to communicate), to provide rich functionality and a level of business agility never before available. For example, instead of using a vendor-dictated, hard-coded program to execute a lead-to-order process, Web services make it possible to simultaneously communicate with a credit validation service to determine the customer's credit worthiness, an inventory application to confirm that the item is available, and an ERP application to confirm that the order is in process.

Businesses now have the choice of which services and systems to use. No longer does the application vendor dictate the process, but the process dictates what apps and services are needed. Depending on IT's needs, services can be internally created or purchased from the growing number of commercially available services on the Web. What's key about Web services is that they make it possible for organizations to share both data and business logic with other applications and services, without any knowledge of the details of the IT systems involved. By being able to choose the best services for the job, businesses benefit from an unprecedented level of flexibility.

Salesforce is Standards Based

Web services technologies provide a standardized way to integrate, over the Internet, applications that adhere to the following open standards:

:: **XML** (Extensible Markup Language): Designed especially for Web documents, XML is used to tag an application's code to specify the definition, transmission, validation, and interpretation of the tagged data. To start an analogy, think of using XML to encode the message to be sent.

:: **SOAP** (Simple Object Access Protocol): This messaging protocol is used to encode the messages as Web service requests and responses before they are sent across the network, most commonly via the HTTP protocol. A good way to think of SOAP is as the envelope for the message.

:: **WSDL** (Web Services Description Language): WSDL is an XML-formatted language that describes a Web service as a collection of communication endpoints that can exchange messages, so that any services that recognize those endpoints can communicate with each other. The WSDL specifies the delivery options available to the SOAP envelope. Salesforce is WSDL 1.1 compliant.

To summarize, XML is used to tag data, SOAP transfers it, and the WSDL describes the available services and their endpoints. These technologies make it possible to get a message to a known destination, without having to know what's in the message.

Force.com Connect is based on the following web services standards:

:: Simple Object Access Protocol (SOAP), 1.1 compliant

:: Web Service Description Language (WSDL) 1.1 compliant

:: WS-I Basic Profile 1.1 compliant

Salesforce Integration Building Blocks

To make integration with both existing systems and emerging Web services possible, salesforce.com provides the following nine integration building blocks. The first four, which are an integral part of the Salesforce architecture, are used in every integration project. The others are optional tools that can be used as needed.

:: Multitenant architecture

:: Salesforce.com's security model

:: Force.com Web Services API

:: Force.com Data Loader

:: Force.com Builder

:: S-Controls

:: Realtime outbound messaging

:: Apex call outs

:: Apex custom web services

Multitenant Architecture

Salesforce.com's multitenant architecture is a key factor in making possible faster integration projects, with fewer risks. Just as this architecture simplifies deploying, customizing, and managing applications, having all customers share a common infrastructure and code base simplifies the integration task immensely. Instead of having to support various platforms, versions, and countless APIs that are implemented independently for each customer, Salesforce provides a central access point all customers and partners can use to interact with data and processes from within Salesforce. This means that a partner needs to build an integration solution to Salesforce just once; the solution automatically extends to all salesforce.com customers. When a customer creates a custom object in Salesforce, that custom object is immediately available from the API, with no additional work. This is what makes developing such solutions so attractive for a growing number of integration partners.

The multitenant Force.com platform includes all the tools necessary for building business applications, including tools to create any data model, a workflow engine to manage business processes, tools to create any user interface, the Force.com API to access Salesforce data, and Apex Code, for complete freedom to customize and innovate.

Salesforce.com's Security Model

Salesforce.com is recognized for its leadership in providing a highly scalable and secure internet platform.[1] This is critical because security and integration go hand in hand. As applications become increasingly interconnected as a result of service-oriented strategies, the security of data transfer becomes paramount. As Web services and application-to-application interactions start to surpass human-to-application interactions, it is important to address the following topics:

:: Access: Data is protected at multiple layers that can be applied in various combinations, including at the object, record, and field levels. In addition, administrators can assign data security rules that determine which users have access to which data. Sharing models define company-wide defaults and data access based on a role hierarchy.

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1 Independent audits—including the SysTrust audit, the recognized standard for system security, and SysTrust SAS 70 Type II, a attestation for internal corporate controls—confirm that salesforce.com's security model goes far beyond what most companies have been able to achieve for themselves.

:: Transport: Salesforce adheres to SSL (Secure Sockets Layer), the premier security standard for Web services integration. All data is encrypted in transfer and all access is governed by strict password security policies.

:: Authentication: Salesforce uses unique tokens, certificates, and identifiers that can be passed to external systems to ensure user authentication, including support for single sign-on.

When integrating with Salesforce, all data communication between Salesforce and external applications goes through the Force.com API. The API shares the same application security model as the rest of Salesforce to provide a consistent, highly secure model for accessing Salesforce data, regardless of whether the user is a named user or an external application.

Force.com Builder: Simplifying Integration Tasks

Used primarily as a tool for customization, users point and click to configure the attributes—known as metadata—associated with an application's objects. This metadata adds up to an application's "blueprint," which is rendered in the user interface whenever a user interacts with the application. In the context of an integration project, Force.com Builder simplifies creating custom objects that will map to objects in the target system and can be used to modify an application's data model, business logic, and user interface. When integrating business processes, Force.com Builder works with the Salesforce workflow automation capabilities to streamline business processes.

Force.com Web Services API: The Foundation for Integration

The Force.com API is part of the next generation of integration technologies that are based on platform-based APIs that are accessible over the Web, with the same proven availability that salesforce.com provides for all its applications. The Force.com API is fundamental to all five integration paths. It provides access to all data stored in the Salesforce database. By using this API, developers can access and interact programmatically with any standard or custom objects, Web services, Salesforce applications, or other applications that run on the Force.com platform. Introduced in 2003, the Force.com API includes all the operations necessary for even the most demanding integration projects.

The API functions as the access point for an integration—the business logic, connectivity to other systems, and data transformations are managed either in Salesforce, a middleware or SOA technology, or by custom programming. To communicate with the Force.com API, a public WSDL can be downloaded from the salesforce.com website and used to create Web-based integrations. Integrations use the Simple SOAP protocol, which is used by Web services to communicate with each other by passing XML-encoded data over the Internet. Because almost all programming languages can create and consume SOAP messages, developers don't need to know any details about coding in XML—it is one of the tasks handled by their development environment. And because the Force.com API is designed to mirror common database syntax—including SQL, JDBC and ODBC—the API will be immediately familiar to developers who have worked with databases.

A critical benefit of the Force.com API is that, by monitoring calls to the API, it is possible to closely observe traffic and use that information to maximize the system's performance with real-time tuning. Salesforce.com uses this detailed knowledge of performance, scalability, and peak requirements to reduce its own average time of page delivery; in fact, as the number of salesforce.com customers and subscribers has skyrocketed, the average response time has declined steadily and now averages lower than at any time in the company's history.

With http://trust.salesforce.com, every customer can do the same. Introduced in 2006, the website gives customers access to real-time and historical system performance information and updates, incident reports, and maintenance schedules across all key system components.

Salesforce Integrations Now Make Up the Majority of Traffic

To appreciate the impact of the Force.com API, consider this: Force.com API transactions now exceed Salesforce page views to make up the majority of salesforce.com's more than 5.3 billion quarterly service transactions. That makes the Force.com API one of the most popular APIs available today and illustrates the growing importance of Web-based integration.
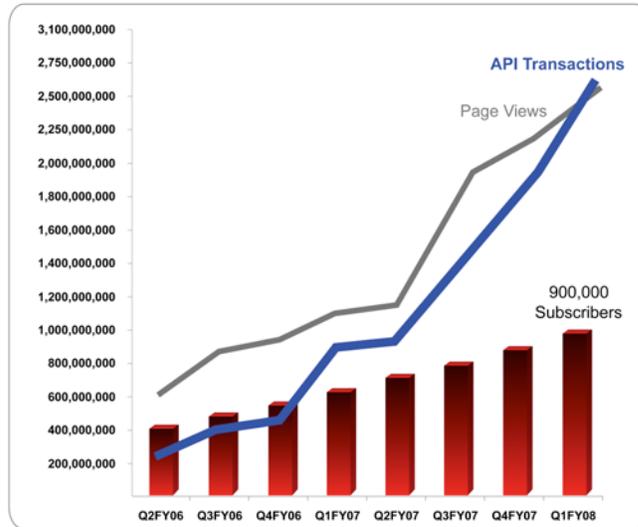
Figure 3: As both Salesforce page views and API calls increase rapidly, API calls are starting to exceed page views.

Force.com Data Loader: Batch Updates Made Easy

This data-loading and extraction tool makes possible bulk imports, exports, and updates from Salesforce and other applications, such as ERP and legacy applications. The Data Loader's wizard-based interface guides users through selecting data sources and field mappings. Force.com Data Loader provides a great deal of power for one of the most common integration use cases; updating and consolidating data automatically across systems.

S-Controls: Providing an Integrated User Experience

By invoking the Force.com API from the user interface through client-side JavaScript, s-controls make possible integration at the presentation level. This popular Salesforce technology makes it possible to extend both the user interface and the capabilities of Salesforce applications to include integrations at all levels. S-controls can be embedded in tabs, within detail pages, or even within dashboards to provide one of the simplest, easiest, and most commonly used forms of integration.

As a part of composite frameworks, s-controls can also work at the process or data level to invoke API code—typically using either JavaScript, AJAX, or Adobe Flex running within the browser, or code running on an external Web or application server—to access an application's database.

Real-Time Outbound Messaging

When triggered by events in a Salesforce application, real-time outbound messaging sends an outbound message to an external application in real time. For example, when an opportunity closes in Salesforce, the change in the status of the sales deal can trigger a message to sales operations to prepare a contract for the impending order. The contract management application may then either send a simple confirmation to Salesforce or request additional customer profile data from the Salesforce API to complete the process.

Real-time outbound messaging is based on workflow rules that define both the events that will trigger the messages and the desired responses from the external application. Real-time outbound messaging operates in asynchronous mode, meaning that one-way messages are sent back and forth between the application that wants to consume the service and Salesforce. Real-time outbound messaging is often used for account synchronization with external systems and for real-time alerts. For example, when a customer is created in Salesforce, an external system can be notified to create a matching account to ensure a consistent view across the enterprise.

Apex Call Outs: Consuming External Services in Salesforce

As it becomes possible to not only expose Salesforce Web services, but to directly consume external Web services as well, Salesforce extends its ability to support end-to-end business processes that span multiple systems, without additional hardware or software. For example, customers could use Apex call outs to:

- Check pricing from an ERP application before saving a quote

- Confirm availability from an external inventory application in before promising delivery

- Check credit from a credit bureau before completing an order

:: Access customer profile data from services such as Hoovers to reduce data de-duplication and increase customer profile data

Such virtual, reusable processes can benefit greatly from the scalability and agility of the on-demand model. As external services are integrated in the Salesforce interface—typically as custom buttons—they can become part of a business process, such as capturing a lead, quote, or order. The result is intelligent Web services integration that can be used to communicate programmatically with an internal or external Web service in the context of a business process.

On the technical level, Apex call outs are synchronous rather than asynchronous, so that messages execute immediately, rather waiting for a response. And because Apex Code runs natively on Salesforce servers, developers are freed from client-side considerations. By adding intelligence to existing applications by capturing business logic and rules such as data validation, customers can create highly complex integrations. Such integrations can include internal systems such as Oracle Financials, SAP Order Management, and other billing, inventory, and order entry systems, as well as external Web services such as FedEx, Hoovers and Yahoo!, to make possible business processes such as inventory checking and order fulfillment. These integrations will benefit from all of the advantages of a multitenant architecture, such as encapsulation to protect against faulty code, and automatic upgrades.

Apex Custom Web Services

With the availability of the Apex language, salesforce.com can now provide Apex custom Web services. Apex custom Web services allow salesforce.com customers to write logic in Apex Code and instantly make that code available as a web service over the Internet. This ability to create custom Web services using the Force.com platform delivers a new level of innovation and agility for salesforce.com customers and partners. All services are carefully governed and protected by the Salesforce security model to ensure scalability and security. Services can be used as extensions of a customer's organization to expose a critical service, or independently by a partner to produce a value-added Internet service available on the AppExchange.

Force.com Connect Integration Paths: A Closer Look

Depending on your integration project, you can choose the approach and associated technologies and services from the five integration paths offered by Force.com Connect.

In the past, the fear of a lengthy, expensive integration kept many customers from even attempting such projects. However, as you can see from the sampling of customers in the table below, integration projects—even projects that involve integration with enterprise systems—can be completed relatively quickly by using the integration paths of Force.com Connect.

Table 2 shows how businesses of all kinds have used the different Force.com Connect integration paths to integrate diverse business processes

Customer	Application	Process	Path	Time
Singapore Airlines	Vertical Response	eMarketing	AppExchange marketplace	Instantly
Infoworld	Lotus Notes	Contact management	Native connector	1 day
ABD Insurance	Microsoft Outlook	Contact management	Native connector	1 day
Symbol Technologies	SAP	Forecasting and order management	Native connector	2 days
Karl Strauss Breweries	Microsoft Great Plains	Order management	Partner ecosystem	30 days
SPSS	Oracle	Customer master	Partner ecosystem	10 days
Magma	SAP	Account and customer master	Partner ecosystem	5 days
Lightwedge	QuickBooks	Order management	Partner ecosystem	1 day
Esker	SAP	Quotes and invoices	Custom development	30 days
Heald College	Peoplesoft	Student recruitment	Custom development	60 days
ADP	Legacy	Order management	Custom development	60 days

Of course, the time investment is only one factor in an equation that adds up to the total benefits a customer achieves from an integration project. As you read about each of the integration paths and the customers that have used them, you'll find out more about these additional benefits.

Native Desktop Connectors

What makes users productive? What helps them to make fast, well-founded decisions? The answer to both questions is easy access to complete information and tools that don't get in the way. Desktop integrations let users work in familiar applications and help to eliminate information gaps, inconsistencies in customer data, customer service issues falling through the cracks, and the need to switch between applications. That not only makes users happy and more productive, but it makes it possible to capture all customer interactions and activities in your "corporate memory."

The native desktop connectors help keep Outlook, Office, Lotus Notes and Salesforce data in sync no matter which application the user is working in. They synchronize key contacts, calendar events, and tasks for Outlook and Lotus Notes and make it easy to connect Office documents with critical data in Salesforce. For IT, desktop integration is a one-click process—because integration with Outlook Exchange server is not required, there are no IT headaches, either during the implementation or with ongoing maintenance.

- :: **Force.com Connect for Microsoft Outlook** (formerly Microsoft Outlook Edition): With millions of users using Microsoft Outlook as the primary way to communicate with others and organize their own work, integrating Outlook and Salesforce results in huge productivity gains, reduced email clutter, and a complete account history for full insight into the status of customer issues.

- :: **Force.com Connect for Microsoft Office** (formerly Microsoft Office Edition): This connector makes it possible to easily incorporate Salesforce data into Word documents and in Excel spreadsheets, or to attach Office documents to Salesforce.

- :: **Force.com Connect for Lotus Notes** (formerly Lotus Notes Edition): This connector ensures that data in Lotus Notes and Salesforce applications is always consistent and up to date.

Thousands of customers have integrated Salesforce with Outlook and Lotus Notes, including the state of Wyoming.

State of Wyoming

The state of Wyoming created the Wyoming Business Council (WBC) in 1998 to focus public and private efforts on building a strong job creation base in the new economy. The council chose Salesforce as the organization's core CRM system, but the reality was that Outlook was the productivity tool of choice among its users. Especially important for the state's Salesforce implementation was buy-in and adoption from its geographically diverse group of regional directors.

Integration to Salesforce with Force.com Connect for Outlook was a key component in bringing these two preferences together and meeting the council's goals. By using Outlook from within Salesforce, WBC users can integrate their Outlook email, contacts, calendar events and tasks into Salesforce, while maintaining critical associations to Salesforce records, such as their custom-built "WBC products."

According to Peter Reis, "good Outlook integration and custom object support are the main reasons that we are salesforce.com customers. The calendar integration gets major credit for increasing the use of the system by our regional directors."

AppExchange Marketplace

With more than 700 pre-integrated applications, the AppExchange marketplace is changing the face of integration. Choosing an app from the AppExchange is the easiest and fastest way to add pre-integrated functionality, either to extend existing Salesforce solutions or to add entirely new applications. It's easy because the creator of the application as already done the work necessary to make the new app work with Salesforce. The Salesforce multitenant architecture and the platform-based API effectively shift the burden from the customer to Salesforce and its partners. The result is integration to hundreds of partner applications with the click of a button.

Popular applications include email marketing, data de-duplication, and prebuilt mashups, apps that let users visualize account, contact, and lead mapping, as well as apps make it possible to initiate VOIP and conference calls from within Salesforce. By using the point-and-click Force.com Builder or creating your own code, you can customize these solutions and benefit from a key on-demand advantage—automatic upgrades that leave your customizations and integrations intact.

Singapore Airlines Ltd.

One customer that successfully used apps from the AppExchange marketplace is the North American sales organization of Singapore Airlines Ltd, which implemented Salesforce SFA in 2006 to improve collaboration between its geographically scattered sales staffs. Once the application was running, Michael Stellwag, the Americas manager of direct sales and marketing, started to explore whether it was possible to extend SFA with applications from the AppExchange marketplace.

He found 14 apps that met the group's needs, including user adoption dashboards that monitor whether the sales staff is using the application, and access to the Hoover company database, so that sales people know all there is to know about the customer before they make their calls. With the success of Salesforce SFA and the apps from the AppExchange, the company decided to also explore desktop integration and plans to make IBM's Lotus Notes available from within Salesforce. This solution—the first Salesforce integration path—will put an end to having to switch between applications and will further encourage collaboration.

Native ERP Connectors

One of the most important business challenges is data consistency between sales data and financial and operational data. Of the five paths to integration, three paths address this scenario, including native ERP connectors for SAP and Oracle built by salesforce.com. These connectors—Force.com Connect for SAP R/3 and Force.com Connect for Oracle 11i—are suitable for customers who want to integrate enterprise customer master records with Salesforce account records to provide a consistent view of customer data elements. The goal is to consistently upgrade and synchronize account information in both systems to provide a consistent, 360-degree view of the customer.

Force.com Connect for SAP R/3

The native SAP connector uses SAP's JCo connector (a Java native interface written on top of SAP's proprietary RFC protocol) to connect to SAP R/3. This connector includes:

- :: **Pre-built semantic transformations** from the Salesforce account object to the SAP R/3 customer master object, including three integration points. These transformations are implemented in Extensible Stylesheet Language Transformation (XSLT). They can be customized easily either with a Visual XSLT mapping tool or a simple text editor.

- :: **Cross reference management**, to manage references to SAP. After a Salesforce account object is synchronized with the SAP customer master object, the External ID column in the Salesforce object is used to keep a cross reference between the Salesforce Account ID and the SAP Customer Number.

- :: **An integration administrator console**, to make it possible to monitor the data exchange status and error messages. The SAP R/3 connector administration console is a native Salesforce application that can be downloaded from the AppExchange marketplace.

- :: **An implementation guide** that includes an installation and user guide, with detailed instructions and integration best practices.

Force.com Connect for Oracle 11i

The native Oracle connector is a lightweight, packaged Java-based integration solution for Salesforce and Oracle e-Business Suite 11i. It includes the most commonly used semantic transformations, cross-reference management, an administrator console, and an implementation guide.

This connector makes possible a consistent view of relevant customer data in both systems, as well as the bi-directional synchronization of account information between Salesforce and Oracle e-Business Suite 11i. The connector is deployed on premise, with the Oracle e-Business Suite 11i system.

Symbol Technologies

Symbol Technologies, a leading global provider of full-service, integrated enterprise mobility solutions, needed a CRM solution to reduce administrative time, cut costs, and provide greater control over its sales operations. Symbol also needed real-time, bi-directional integration between its new CRM application and its legacy SAP and Commergent applications.

Symbol started to develop the integration between the Force.com API and SAP with its in-house resources. When the native connector became available, Symbol was the first customer to try it. Symbol chose Force.com Connect for SAP R/3 because it saved time and effort—Symbol was able to install the connector in a fraction of the time of its own development effort. The result? A single-vendor solution that delivered prebuilt customer and account synchronization between SAP and Salesforce.

To further enhance its SAP integration solution, Symbol used a partner solution from the AppExchange marketplace that exposes key SAP data in the Salesforce interface. As a result, the Symbol sales reps now have the information they need to build and grow relationships with their customers, while the Symbol technology team can more easily manage and support the solutions from all Symbol vendors across its global implementation.

Integration Partner Ecosystem

Saleforce.com's integration partner ecosystem is one of the most comprehensive and active integration ecosystems in the industry. Hundreds of salesforce.com customers use these partners to connect to other systems in their IT portfolios. Partner solutions can support the most sophisticated integration requirements, based on decades of experience and a broad range of offerings.

Salesforce integration partners represent the top brands in the market. The ecosystem is designed to deliver solutions that provide maximum choice and cross all major integration technologies and approaches, ranging from data migration solutions to real-time bidirectional messaging to complete SOA infrastructures. Customers often find that their integration standard is already a certified salesforce.com partner.

Over 31 integration partners offer their solutions in the Integration category on the AppExchange marketplace. Here you can review in detail the solutions associated with each of the following capabilities:

- :: Application integration
- :: Data integration
- :: Data cleansing
- :: Desktop integration
- :: ERP integration

Each integration partner is certified on the Force.com platform. Most solutions include pre-built connectors for both Salesforce and the most common enterprise applications and technologies, including legacy systems, all major accounting packages, best-of-breed SOA platforms, integration appliances, mashups, and much more.

Most of all, these partners offer a deep knowledge of integration technologies and extensive integration experience. This partner ecosystem ensures that you'll always have access to the latest technologies and integration best practices.

Figure 4. Integration partners provide integration solutions at the presentation, data, and process levels.

Magma Design Automation

Magma Design Automation, a leading maker of electronic design automation (EDA) software, uses Salesforce to automate its sales, service, and marketing processes with its legacy ERP application. The company chose Salesforce because its existing CRM system could not support its unique requirements and because Salesforce was cost effective, easy to customize, and could be integrated with external applications.

For its integration solution with SAP R/3, Magma evaluated the integration broker (SAP XI) capabilities of SAP NetWeaver, but chose salesforce.com integration partner Cast Iron to provide the fastest and least expensive solution to their needs. The Cast Iron application appliance is now used to deploy real-time, bi-

directional integration of purchase requests, sales orders, and vendor and product master data between SAP, Salesforce, and two additional endpoints.

For Magma, the integration makes it possible to monitor business activity more effectively and to proactively escalate customer issues to its support personnel. The result is an end-to-end process integration that reduces operational costs and makes Magma more responsive to its customers and more competitive in the market.

Developer Toolkits

For integration projects implemented with custom programming, Force.com Connect supports most programming environments with its toolkits. For building custom integrations that interact directly with Salesforce functions and data via the Force.com API, the Force.com platform supports all major development environments and tools, including J2EE, .NET, AJAX, Ruby on Rails, and PHP. This option gives you the most flexibility and choice for leveraging your in-house developers' skills and preferences.

You can also create integrations that run natively on Salesforce servers using Apex Code, salesforce.com's own programming language, and publish any method as a standard Web service. Freed from client-side considerations, developers can add intelligence to existing applications by capturing business logic and rules such as data validation, to make possible the integration of complex business processes such as inventory checking and order fulfillment. Such application integrations, which are 100 percent multitenant and encapsulated to protect customer implementations against faulty code, will be automatically upgraded.

You can access these toolkits and open a free Developer Edition account on the Force.com Developer Network at www.salesforce.com/developer.

ADP

ADP is one of the largest providers of a broad range of transaction processing and information-based business solutions. With approximately 590,000 clients worldwide, ADP needed a CRM solution for its diverse, multinational sales force, in which no two sales organizations work exactly alike. To create a single view of the customer across the company and to streamline the order management process, ADP needed to integrate Salesforce with over 20 separate solutions, including Oracle 11i ERP, Oracle's data warehouse, and multiple legacy and custom-built applications.

ADP's integration project was a lighthouse project for demonstrating that the Force.com platform could meet challenging integration requirements, both in terms of integration complexity and the ability to scale. ADP partnered with salesforce.com to build a custom integration solution that synchronized multiple data silos to create an integrated sales order process. This process not only required less manual entry, but resulted in a more effective and error-free flow of product, pricing, and order information between the front- and back-office applications. As a result, ADP's inbound lead conversion increased by 400 percent. The project also resulted in several API enhancements that now benefit all salesforce.com customers.

Summary

With over a billion API calls every month, integration transactions are surpassing Salesforce page views, making Salesforce one of the most heavily integrated business applications in the world. As thousands of customers create integrations with everything from Google maps to ERP systems, salesforce.com proves that it supports the deep integration needs of organizations large and small—on demand.

Force.com Connect offers five mix-and-match approaches to meet the organizational, infrastructure, and user needs of any customer: Native desktop connectors, the AppExchange marketplace, native ERP connectors, an integration ecosystem, and custom development. The first four paths provide customers with a familiar SaaS advantage: getting the business benefits of integration without the IT burden. The fifth path provides total flexibility and control. All paths lead to a no-headache approach to solving the biggest problem in IT today.

To further explore which integration options might be right for you:

- Check out the solutions in the Integration section of the AppExchange marketplace

- Learn how 50 customers have achieved integration success by downloading *Integration Success on Demand with Salesforce.com*

- Read the latest integration news in the Integration section of the salesforce.com website

- Find technical integration discussions and the latest documentation on the ADN site

- Ask questions on the Successforce site

- Post your ideas on the Idea Exchange

Or contact your sales representative.

For More Information

Contact your account executive to learn how we can help you accelerate your CRM success.

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