



A Service Model for Collaboration

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Collaboration allows employees to connect with colleagues, share information and ideas, discover who else in the organization is working on the same issues, and increase productivity. People solve problems they wouldn't otherwise have solved, get work done quicker than ever before, and feel connected because they are working together toward a common goal. Whether you are a leader in the public or private sector or a technologist, you've seen the difference in your bottom line; when people are collaborating, profits increase and things get done. When they're not, you lose time and energy. When your team members fail to put their heads together – or attempt to put their heads together but lose vital components of the puzzle in the tangle of e-mail, Internet, phone, and instant messaging (IM) – your business or agency suffers.

Consumers today have numerous options to collaborate with friends and family. Most are free and very easy to use. Collaboration in the corporate world has lagged behind collaboration in the consumer environment. It's certainly not because these tools have been unavailable in the corporate environment. In fact, collaboration capabilities within the work environment have been around for over 20 years, including File Transfer Protocol (FTP), e-mail, file sharing, and IM.

Client/Server Solutions

As collaborative technologies evolved throughout the 1990s and into the early 2000s, most implementations used client/server technology. This technology consists of a single server that has a significant amount of computing resources, multiple processors, random access memory (RAM), and disk space and numerous client applications connected to the server. The clients are traditional applications that are installed on a desktop system and require a specific set of resources from the desktop, such as memory,

disk space and processor speed.

Although the clients were rich with functionality, the client/server model had many pitfalls, such as the following:

- **A single point of failure** – If the server crashed, all applications were down.
- **Scalability issues** – Adding new computer resources on the server was not easy and required system downtime, which sometimes extended over several days.
- **Integration issues** – Proprietary communications between the client application and the server made integration with other applications difficult, if not impossible.
- **Network issues** – Each application used its own network ports, requiring the IT department to open firewalls.
- **Desktop installation** – Each application needed to be installed directly on the desktop system. Upgrades were a challenge, and new versions of software often required resources (such as additional RAM) that weren't available on the desktop.

Collaboration as a Service

Benefits of collaboration delivered as a horizontal service

It's imperative to provide a reliable and robust system to enable users to collaborate. The pace of business demands the limitation of downtime. (Just imagine the uproar if Facebook were to go offline for an hour for maintenance.) In addition, it's important to engage as many users as possible. The more users in the environment, the greater the chance that people will collaborate. So, eliminating the barriers to entry is critical.

As the transition from Web 1.0 to Web 2.0 occurred, systems migrated from a client/server model to a Web delivery model. More and more rich applications were delivered via Web browsers, which have the following advantages:

- Use of standard Internet Engineering Task Force (IETF) protocols, such as Hypertext Transfer Protocol (HTTP), Extensible Messaging and Presence Protocol (XMPP) and Lightweight Directory Access Protocol (LDAP);
- Access to standard services such as authentication, authorization, single sign-on and database servers; and,
- Web delivery, which provides capability to cluster, scale, and enhance delivery to end users.

Integration with core services

As systems got larger and more complex, the IT industry adopted a service-oriented architecture (SOA) for building IT infrastructure. In the simplest terms, SOA is a software architecture that is based around a series of common reusable services. A service in SOA is a portion of software that performs a defined set of work that is useful for one or more applications. Each service has a predefined interface through which other services can access its capabilities.

In a service model, applications can be built upon core

services such as the following:

- **A service registry** – A registry of available services and how to access them;
- **Identity management:** A registry of users and their contact information;
- **Authentication** – A common service that manages account information, passwords, and digital certificates; and,
- **Authorization** – A common service that identifies whether or not a user has access to a specific resource, such as a document.

With this model, chaos is replaced by ease-of-use. All of these services provide core functionality that can be used by a collaboration service, thus preventing duplication of information.

The core services then become the foundation of the IT infrastructure. A service-oriented architecture not only eliminates the cost of duplicate services, but also allows the sharing of information across various applications. This provides a more robust feature set for the employees.

Collaboration: Stand-alone or Integrated Service?

What's far more familiar to most leaders is thinking of collaboration technology as a stand-alone product. From this perspective, the collaboration tool is an application, in and of itself, that runs separately from the other applications employees are using on a daily basis. The collaboration tool functions like an e-mail tool, for example. When it's time to send an e-mail, you have to launch a separate e-mail client. In the same way, when it's time to use your collaboration suite, you have to open a separate application or open a browser and go to a specific URL.

Instead, imagine collaboration as a horizontal software application, connecting all your independent applications and performing the same way authentication services function. When the collaborative service is embedded in your human resource application, in your accounting application, in your sales application, and so on, these applications can function in conjunction with one another. More importantly, employees using these separate applications can interact with one another.

Conceptualizing collaboration as a service rather than a product seems strange to some chief information officers. But, as soon as they start to picture how a collaboration service would function in their organizations, they can't imagine how they ever scraped by without it.

Core components

Collaboration, more than almost any other kind of solution, needs to function across the entire enterprise. And, that means it needs to work well with every other solution you've already integrated. Rather than being one-size-fits-all, it needs to be entirely component-based, working within and in conjunction with your existing enterprise architecture.

The Internet is now able to support rich applications that were once available only as native applications installed directly on a desktop or as applications on a mobile device. In

addition, Web browsers are sophisticated enough that they can support very interactive Web applications.

You might be familiar with some of the technologies used to deliver Web 2.0 applications. Among the most common are Asynchronous JavaScript (AJAX) and Extensible Markup Language (XML), HyperText Markup Language (HTML), and browser plug-ins such as Microsoft Silverlight, Java and Adobe Flash. To understand how collaboration service capabilities can be integrated, you don't actually have to understand how these technologies function. What's important to note is that they make it possible for a simple Web page to look, act, and feel just like a fully fledged application that you might install on your desktop or mobile device.

A Web browser with a sophisticated rendering capability gives you a blank canvas with almost limitless possibilities. You can work with the Web applications that your end users already interact with every day. Most of these applications are flexible enough that adding collaborative capabilities to them is a relatively simple procedure.

Building the collaborative environment into your existing architecture also means that you will have the flexibility to craft a variety of offerings for your end users. A common predicament of today's wired world is this: having many different options means that individual users wind up feeling married to their interface of choice. With component-based collaborative capabilities, you'll have the adaptability to satisfy myriad and sometimes contradictory tastes of your employees.

When you start to think of collaboration as a series of components rather than one large application, you can more easily see how it can integrate into your architecture effortlessly. You'll be installing small components that can settle into your framework without creating stovepipes or causing other disruptions in the system you've already worked hard to create, whether you built it in-house, purchased off-the-shelf products, or researched and deployed open-source solutions. Once you change the way you think about collaboration, you can mix and match how you use various collaborative capabilities within your organization. You only have to use what you need to deal with the situation at hand – and that means that the barrier to entry is leveled. The best philosophy to adopt is, "If you integrate it, they will use it."

Using an application programming interface (API) to access the collaborative service

An API should allow developers to interact with the collaboration server to perform any actions that the end users can perform. Developers should be able to use this API to identify who is currently online and determine their status, create a new virtual room, insert documents into the system, send a chat message to a group of users, and so on.

For example, many systems are set up to notify users of an event via e-mail. But, what if you could check the presence awareness service to see which users are online and send them an IM regarding an important event or piece of data? Once notified, users could access the information, as well as reach out to online colleagues to collaborate about the issue. The result would be a system that alerts people in real-time

and allows them to interact with other users, as opposed to engaging in another long e-mail dialogue. In addition, the entire session can be recorded and reviewed at a later time.

Knowledge management

If you implement collaboration as a service and connect it to other services, such as data repositories, the collaboration service can utilize the knowledge repository to better provide users with the data that they need to become more productive.

The more data that is stored and properly labeled in the knowledge repository, the better the results will be when you attempt to mine the data; thus, your overall goal should be to increase the amount of properly labeled information in the various repositories. By including data from the collaborative environment in your knowledge base, you are increasing the effectiveness of the corporate knowledge base. Suddenly, IMs, virtual meetings, virtual whiteboards, shared working drafts, and other types of collaborative products become part of the larger enterprise knowledge base.

Having this expanded knowledge base is useful on two counts. First, employees can initiate a search for specific information themselves. They think of a topic that they want to know more about, they type in a keyword, and the system yields documents, e-mails, chats, and so on that have to do with that topic. Second, interaction with the knowledge base is a two-way street. Not only can employees approach the system to request data, but the system can approach employees to suggest data that might be relevant to them.

Here's how that works. One benefit of drastically expanding the knowledge base to include information from collaborative software is that patterns begin to emerge very quickly. If the system can keep track of which virtual rooms an employee visits, who she chats with, and which documents she reads, it has a very simple basis for creating a profile of the employee's expertise and areas of interest. And from there, connecting her to colleagues who could help, or be helped by her is the logical next step.

Cloud services

To take advantage of a cloud service, all a user needs is a Web browser and access to the Internet. That's why cloud services have become particularly popular in a down economy, when small to mid-sized businesses are wary of spending much-needed resources on software licenses, servers, and the IT personnel to install, configure, and run the hardware and software systems needed to support the company.

In addition to outsourcing their physical infrastructure, organizations can also "outsource" the purchasing of software licenses and hosting applications via the Software-as-a-Service (SaaS) model. The applications can be delivered through the browser to your users without the up-front investment in servers or software licensing.

Another form of cloud computing that is starting to emerge is the offering of Web services in the cloud. This can be viewed as a form of SaaS; however, the Web services provide APIs that enable developers to exploit functionality over the Internet, rather than delivering full-blown applications.

The benefits of the cloud computing model – whether an organization is taking advantage of Infrastructure-as-a-Service (IaaS), SaaS, or both – are huge. As IT becomes increasingly complex and sophisticated, cloud computing can mean that your organization has the tools to get work done faster and better than ever before. The vendors or providers take care of hosting the applications, and your subscribers access those applications over the Internet.

Many vendors and cloud service providers are starting to include collaboration solutions as part of their service offerings. This enables customers to take advantage of the technologies without the up-front cost of purchasing and hosting a collaborative solution internally. Customers using this model are able to reap the benefits of using SaaS for not only core services such as e-mail, payroll, file storage, and so on, but also with collaboration.

Conclusion

Collaboration is crucial for all organizations. When you view collaboration as a series of services, you'll be able to integrate these services across your organization. Bringing collaboration to employees by integrating collaboration services into the tools they already use on a daily basis eliminates the barrier to entry and allows you to easily create the critical mass necessary for collaboration to "go viral."

About the Authors



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