Leveraging Clouds

to Make You More Efficient

How SaaS-y Are You?

by Erik Arnold

Microsoft understands the value of clouds. Do you? Why would Microsoft want to pay more than $40 billion dollars for Yahoo!—a big, sick, purple giant? Might it have something to do with Yahoo!'s recognizing the OpenID standard that enables internet users to have one ID and password to enter its network of sites? It could be all about cloud computing and software as a service (SaaS).

On the surface, the merger doesn't appear to make sense, given that Microsoft and Yahoo! seem to have major overlaps in products and services. However, if you were to go to the CSI lab and analyze both companies, it is very different (for those off the commercial television grid, *CSI: Crime Scene Investigation* is a CBS TV series). Yahoo! is built from the ground up to operate its services over the internet, or what is now called cloud computing. Microsoft's DNA is to create software that runs on its desktop. Hard to believe, but Microsoft knows it has dinosaur DNA, and it wants to change that. The only way to change your DNA is by merging with something different—buy cloud computing rather than build it.

This move makes it clear that 2008 will be the year for cloud computing, and everyone needs to understand and start planning for yet another paradigm shift. This paradigm has been talked about for more than a decade, but the momentum is finally here to make it happen.

WHAT IS CLOUD COMPUTING?

Cloud computing assumes that your work environment (hardware, software, and data storage) is stored somewhere in the "cloud" (internet) as opposed to on your PC; it's an internet service that exists somewhere in the internet cloud. You should not worry (in theory) about who maintains and updates the system. Third parties access the cloud through their own API (application program interface), and it is (again in theory) easy to merge the clouds together as everything is built upon web services.

Besides eliminating hardware, software, maintenance, and upgrade hassles, the other benefits of the cloud sound like the Holy Grail of information sharing: implementation of collaboration, standardized content distribution, easy

searching, and rapid application development. As most of us have experienced in the past, these tasks are very difficult in a PC-centric environment.

The ubiquity of broadband, the rise of social networks, an increase in the number of internet devices, the desire to retrieve content anyplace and anytime, and the massive economies of scale of the large internet companies has made the allure of cloud computing a reality.

CLOUDS IN MY COFFEE

I recently made the complete shift to cloud computing. It has been an epiphany. My New Year's resolution for 2008 was to finally cut the cord from any type of desktop dependence. (My wife wanted me to shed some pounds, but that's another story.) So, on Jan. 2, I purchased a Mac (the only way for me to wean myself from my Windows desktop-based habits) and migrated all of my contacts and calendar information from Outlook into Google Apps. I was up and running in a few hours, and I have not looked back.

Why? I had assumed that my productivity would decrease in the short term, but it has actually increased. I never liked syncing from one computer to another, and I experience joy when my BlackBerry automatically syncs with my Google calendar over the internet. Meeting requests between my Google Calendar, MacBook, and BlackBerry all sync without me having to worry about it.

COLLABORATION ENHANCED

My work environment is now officially Google Apps. For me, the best aspect lies in the collaboration capabilities. I hated the days (well, it still happens) when people emailed Word documents to me with "Track Changes" enabled. Opening a document that is filled with red lines and colored circles drives me crazy. Collaboration becomes a puzzle game as opposed to a productivity enhancer. With Google Apps, the online collaboration is easy, in real time, and comes complete with version tracking and roll-back capabilities. It is eye-opening how much more time I have to be productive now that I'm not dealing with or even thinking about data and content issues. I know that all of my documents are stored in Google, and I can easily retrieve them from my computer, my phone, or anything connected to the internet.

This is the future, and even Microsoft knows it. I say with confidence that 2008 will be the year of cloud computing, my preferred term for SaaS. I think that SaaS refers to a type of software delivery and product, one that is measured in terms of revenue by analysts. SaaS is certainly a type of cloud computing—for a fee—but it limits the potential of the new phase of what is in essence information sharing and collaboration.

Looking back at the trends of 2007, I think it is safe to say that it was the year in which cloud computing went mainstream on the consumer level. I believe that Microsoft thought the same thing. Think about the technologies that caught our attention—mashups and social networks.

MASHUPS IN THE CLOUDS

Mashups are web applications that run in the clouds to create new and distinct web services. When Google, Microsoft, and Yahoo! provided APIs to their mapping technologies, the number of mashups on the internet exploded. The most common mashups came from real estate agents wanting to show their clients the locations of the houses that they had for sale. Since the recent mortgage crisis, home foreclosure mashups are gaining in popularity.

> It's time for information professionals to investigate SaaS and cloud computing.

Thousands of these mashups exist over the internet from the largest media sites to personal blogs. Sites such as ProgrammableWeb.com (www.programmableweb.com) maintain directories of mashups. No one wants to reinvent the wheel, so it is important to know what has been created. When I show these "sophisticated" applications to people, they wonder why their organizations haven't implemented them.

Map mashups are easy to understand because they are visual. Despite embracing map mashup services, organizations balk at leveraging similar cloud services when it comes to their textual information.

CLOUD DEVELOPMENT TOOLS

Given the popularity of mashup APIs, Google, Yahoo!, and Microsoft have created tools to ease development of integrating these APIs. A mini-mashup arms race broke out among them to make it easy for developers to build web applications on top of their clouds.

Google focuses more on the hard-core programmer with its mashup editor (http://code.google.com/gme/tour/tour1.html) that comes with sophisticated online programming environments and detailed debugging of code (at least Google thinks that this is "easy" from its programming point of view). Yahoo! took an innovation lead with the introduction of Yahoo! Pipes (http://pipes.yahoo.com) more than a year ago. Yahoo! Pipes is a drag-and-drop environment where users select the objects they wish to use to create their mashups.

Microsoft recently upped the ante by creating its Popfly service (www.popfly.com). Popfly allows users to drag and drop content pieces, similar to Yahoo! Pipes, but it will

create the mashup as you work on it. This is a very nifty feature and makes creating mashups very simple.

It is important to remember that all three of these sophisticated development environments reside 100% within the clouds of each provider.

SOCIAL NETWORKS

While the mashup popularity started the cloud computing craze, Facebook (www.facebook.com), the current king of social networking, deserves credit for fanning the fire. When Facebook opened its developer network last year, more than 40,000 people signed up to create applications that would run "in its cloud" and be available to its end-users. The amount of innovation of widgets and gadgets within Facebook is important for information professionals to understand.

There are more than 15,000 custom Facebook applications for users to place on their pages and run on their desktops or webpages. Users do not have to log in to receive Facebook news and information. The website has more than 700 "business" applications listed in its directory. So while most professionals may not find the "business" quiz, "How Gangsta Are You?" relevant to their daily lives, the ability to poll colleagues, enter networks, translate languages, and automatically send updates to colleagues do have business implications.

This wave of innovation has caught the attention of the rival social networks, as well as Google, which has made no secret of its desire to have programmers use its API. Hence, Google's answer to Facebook, the OpenSocial standard, aims to out-Facebook Facebook by being a common non-proprietary platform for any organization to develop social applications. Almost every major social networking service, MySpace, LinkedIn, hi5—basically every Facebook competitor—has pledged its support.

LOOKING FOR CLOUD NINE

As social networks and mashups feed the cloud computing boom, don't forget the other types of content distribution mechanisms that currently exist on the internet: email, websites, blogs, microblogs, wikis, RSS feeds, alerts, news readers, and even SMS messages are all ways in which people can receive information. More channels get invented without replacing "older" technologies.

Given this fact, I am astounded and even glad (wearing my consultant hat) that so many organizations, including publishers, actually think they are doing a "good job" on the internet by posting content to a website and hiring a search engine optimization company to promote the site on the commercial search engines. I visited a government agency recently that patted itself on the back for publishing an RSS feed. That is so last century.

INFORMATION/CONTENT IMPLICATIONS

As information professionals, it is imperative to understand that the internet is a complex, networked environment. While life was easier when we only had to worry about a website and email, added complexity means nothing should be "written off" as a fad, as I hear about social networking. Content must be created and published in ways that your customers will read it anywhere and will develop value-added applications.

The world is quickly evolving to where everything is stored on the network—where your main growth of users may come from a Facebook application developed by a teenager. Whether you believe this or not, it should be clear that information must be published in a standard format so your information can appear in these applications.

Content distribution does increase the bottom line. Most people understand that backlinks are the one reliable way to pump up your organization's ranking in the commercial web search engines. Even libraries, which aren't seeking to earn money, can benefit from increased visibility. Being easy to find increases usage. That is the bottom line for libraries.

This is easier to understand when you look at the cloud holistically. I had to take the plunge to 100% cloud computing to understand the value of using the cloud for everything: creating content, storing documents, and publishing. It is in the DNA of these systems to make everything standardized, sharable, and searchable. Just a few weeks ago, I would create a document in Word, send it around for comments, create a final version, convert it to XML, HTML, etc., and then place it on a website. This process involves many more steps compared to creating a document on a network and then having things "just happen."

BUSINESS PROCESS IMPLICATIONS

Salesforce.com (www.salesforce.com), the web-based customer relationship management (CRM) system that took down Siebel Systems (the leading enterprise CRM vendor), proved that software as a service could be a viable business model.

The SaaS model worked because salespeople are intolerant of computer glitches. Cloud computing circumvents the barriers established by virtual private networks (VPNs) and clunky enterprise software systems, often in place due to the security concerns of IT departments. I believe the fact that SaaS has been slow to take hold in other sectors of the enterprise has more to do with the inherent power of salespeople than with any technological roadblocks.

Salesforce attracted developers to create applications within its AppExchange, a precursor to the Facebook developer network. Salesforce has also just released an online development environment in the vein of the mashup tools created by commercial search engines. The beauty of the cloud is that all applications are intertwined.

Every major web service has embarked on a strategy of opening up systems to third-party developers. I'm fascinated by how very few businesses do not leverage these tools to increase content usage. Information professionals should investigate SaaS as a possible means of reducing infrastructure costs. Particularly in instances where libraries are adding publishing to their repertoires of

Business-Related APIs

Google	
Android	Build mobile apps for Android, a software stack for mobile devices
Google Data APIs	A simple, standard protocol for reading and writing data on the web
Blogger Data API	Enable your apps to view and update Blogger content
FeedBurner APIs	Interact with FeedBurner's feed management and awareness-generating capabilities
Gmail Atom Feeds	Offers a simple feed mechanism for reading your Gmail inbox or labels
Google AJAX Search API	Put a Google Search box and results on your own site
Google Analytics	Track total page views, unique visitors, and AdWords conversions on your site
Google Apps APIs	Provides domain administration for Premier and Education Edition customer
Google Base Data API	Manage Google Base content programmatically
Google Calendar APIs and Tools	Create and manage events, calendars, and gadgets for Google Calendar
Google Chart API	Dynamically embed charts in your webpage
Google Documents List Data API	Enable your apps to view and update your list of Google Documents
Google Gadgets API	Build mini-apps that run on multiple sites including iGoogle, Google Desktop, or any webpage
Google Gears	Enable web applications to work offline
Google KML	Create and share content with Google Earth, Maps, and Maps for Mobile
Google Mapplets	Build mini-applications to embed within the Google Maps site
Google Maps API	Integrate Google's interactive maps with data on your site
Google Mashup Editor	Quickly write code for simple web applications and mashups
Google News Feeds	Enable Atom and RSS feeds for topic and news search
OpenSocial	Build social applications that work across many website
Google Safe Browsing APIs	Download lists of suspected phishing and malware URLs
Google Search Appliance APIs	Enables complete control over enterprise search results
Google Search History Feeds	Enables RSS feed of Search History for Personalized Search users
Google Sitemaps	Enables Google to quickly crawl your website
Google Spreadsheets Data API	Enable your apps to view and update Google Spreadsheets content
Amazon	
Amazon Associates Web Service	Provides developers with direct access to Amazon's technology platform
Amazon Elastic Compute Cloud (Beta)	Designed to make web-scale computing easier for developers
Amazon Flexible Payments Service (Beta)	Set of web services APIs allows the movement of money between any two entities, humans or computers
Amazon Mechanical Turk (Beta)	Enables companies to access a diverse, on-demand work force to complete tasks requiring human intelligence
Amazon Simple Queue Service	Offers a scalable hosted queue for storing messages as they travel between computers
Amazon Simple Storage Service	Provides a web services interface that can be used to store and retrieve data on the internet
Alexa Web Services	Developers, researchers, website owners, and merchants can incorporate information about websites directly into their own websites or services
Yahoo	
Yahoo! Answers	Offers users opportunity to find and share information with other Yahoo! Users
Yahoo! Local	Offers business reviews, services, and events in local area
Yahoo! Maps	Use and publish maps to websites or in client applications
Yahoo! OpenID	Allows users to access site using existing usernames and passwords
Yahoo! Search	Allows users to access Yahoo! content and services in many programming languages
Utility Web Services	Helpers for applications that consume Yahoo! web services
Microsoft Web Service	
Microsoft Silverlight Streaming by Windows Live	Makes it easier for developers and designers to deliver and scale rich media as part of their Silverlight applications
Windows Live Spaces Photo APIs	Allows a user to delegate permissions for a third-party website to read or read/write on albums and photos stored within Windows Live Spaces via a server-to-server API
Virtual Earth	Comes with an online Interactive SDK to create applications
Live Search	Query for web results, images, news, phonebook listings, feeds, and metatags
Windows Live ID	An identity and authentication system that you can use with your own website or client application
Windows Live Alerts	Communicate with customers with real-time alerts sent directly to their desktops, mobile devices, or emails
Windows Live Admin Center	Provides corporate email in hotmail
Windows Live Messenger	Allows site visitors to engage in IM conversations with site owners or representatives

services, cloud computing as a content management system could yield productivity gains.

Google has more than 100 APIs available for organizations to develop applications—applications that many run in-house using expensive high-end enterprise software and infrastructure. Amazon Web Services allows people to create their own websites on Amazon's infrastructure for a nominal fee, yet many organizations still spend millions of dollars on enterprise software that duplicates this functionality without the inherent benefits of cloud computing.

To put this into monetary perspective, revenue for SaaS within enterprise software markets is projected to surpass $11.5 billion according to Gartner, the IT research and advisory company. Why the growth? Well, IDC, another IT consulting company, reports that every dollar spent on Microsoft revenue results in an additional $8 on IT expenses such as hardware, additional software, and services. No wonder 80% of a company's IT budget is spent on maintenance and upgrades.

TRAILING CLOUDS OF GLORY

The gulf between the operations of new startups compared to larger organizations is as wide as it was before large organizations had to be convinced to provide internet access to their end users 15 years ago.

Every new company with which I have spoken over the last year does its work in the following way:

- Creates and collaborates documents with an online "Office" tool such as Google Apps or Zoho (and Microsoft has even released a cloud version of Office)
- Manages projects in Basecamp
- Uses Salesforce.com to track leads
- Aggregates the information into iGoogle or some other portal or dashboard page
- Has access to all of its information listed above, no matter where it is located
- Markets its products through social networks
- In larger organizations, all of this information is siloed, is hard to find, and causes the purchase of large enterprise software systems.

I admit that I was slow to leverage Apple's iCalendar standard for calendaring into my daily life. Now, I am not sure how I lived without it. Given the efficiencies in productivity and cost, it is hard to imagine how companies that do not embrace this new way of doing business can compete.

So many large companies get mired in large enterprise software upgrades that take months and years to complete—work that does nothing to increase the value of the company's products or service. I'm always surprised by publishers with large CMS systems that do not have the ability to distribute content in XML.

How are local newspapers supposed to compete when they still have employees manually inserting information from obituaries even though funeral homes have actually started to send out RSS feeds that local websites automatically publish?

This is the new world of cloud computing.

HEY, YOU, GET OFF OF MY CLOUD

While the future of cloud computing is clear, it is early in the game. Before you ask your IT department to shift completely to web services, it is important to understand that there are some caveats to this approach.

Choose Carefully

Large web services are entering this game because they have a long-term view. Microsoft knows that it has to accept this model in order to survive. Microsoft proved long ago that the company that can control the developer community will win the war. Once someone in your company learns a set up APIs, he or she will want to continue learning the nuances of that product suite.

Read the Terms of Service

Most APIs listed in the accompanying chart are in a state of flux, so it is necessary to understand the terms of service to learn the stability of the web services or the APIs. APIs can change over time, and when they change, that means that your application will most likely fail. Tests must be built in to the system to be sure the application is ready to be released to your customers or your employees.

Security

While security is a serious issue, every organization has to gauge its level of risk versus the cost in productivity. Some organizations will not host certain data on third-party websites, period. It is tough to argue about security. Security requirements tend to fall in line with the culture of the company. Personally, I take security with a grain of salt given the success of Salesforce.

Trial and Test

Based on the size of your organization, run a trial with a cloud computing service to understand how it could work for you, your department, or your organization. As a baby step, choose an application that will quickly improve or enhance your operation as opposed to recommending swapping a large enterprise system for a cloud-based service.

LARGE BUSINESSES USING THE CLOUD NOW

Large companies such as The New York Times, Adobe, and Apple leverage the cloud to power their websites. I know (and have sold) public-facing search engines when leveraging an API from a commercial vendor would have done the job. It is for this reason that I spend most of my time educating executives on the power of cloud computing. Why pay millions of dollars for enterprise software when a cloud computing solution is feasible?

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