

Easing into Cloud Computing: Google Apps Migration

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Introduction

Almost all companies already employ at least one business application hosted outside the company's own data center (e.g., SalesForce.com). Many of these SaaS applications are hosted by a particular vendor in that vendor's data center in a known place. But what about the newer model where critical applications, infrastructure or development and delivery platforms are hosted on Google, Amazon, SalesForce.com, VMWare, or other vendors' servers at some unknown location somewhere in the "cloud"?

Many companies have been reluctant to commit their core mission-critical business applications and data to such unknown environments. Some worry their business's lifeblood--secure customer and employee data, intellectual property about products and services, or sensitive financial information--could be compromised.

Rather than jumping into the cloud with your whole organizational body all at once, one lower risk approach is to get your corporate feet wet and learn the ropes by migrating to one of the new collaboration and sharing environments such as GoogleApps. This white paper explains key considerations for accomplishing such a migration, based on the author and his team's successful experience migrating the nation's (circa) 75th largest school district to a new GoogleApps environment.

Scope and Timing

In the case of the school district, we decided to migrate all employees first, so our 6,500 teachers, support and management personnel could learn the new system deeply before our 61,000 students came online. Then students would be migrated about seven months later at the start of the new school year. Some smaller organizations may choose to migrate only one site or a few sites at a time if they cannot handle the upfront training and support workload.

Since GoogleApps has a large number of features beyond email, calendaring and groups, it is important to manage users' expectations regarding which features will be part of the formal migration and training. We chose to limit training and support to the basic features initially, and not to immediately provide training for Google Sites or other special features. We did, however, allow people to learn and use these features on their own if they so desired.

The date for migrating employees was selected based on when: a) the existing emails and other data could be migrated electronically (using custom scripts) for all 6,500 personnel, and b) the least disruption to the business (of education) would occur. Holiday breaks were not good because most employees in a school district are off and not available for training, even online. Grading periods, finals or mid-terms, and similar times of year were also not acceptable due to the extreme impact this would have on very busy teachers.

Selling the Business Case

One of the great benefits of migrating to a new set of collaboration, communication, and work efficiency tools like GoogleApps is that many people are already using them in their home and work environments, so the project almost sells itself. The demand has been growing virally for some time now, and often people respond with "All right! I can't wait" or even "It's about time IT gave us some 21st Century tools!" Nevertheless, the project must be sold to senior management based on both "soft" or non-dollar benefits and "hard" dollar benefits.

Soft, but Important Benefits

From a non-dollar standpoint, the new tools like GoogleApps for Education offer many benefits management and other employees desire, including:

- Simplified Communications and Streamlined Processes -- many people find the modern tools like GoogleApps to be more intuitive than older ones. As with Twitter and Blogs, emails can be "tagged", prioritized, and searched instantly with powerful search engines, meaning people no longer have to manage folders unless they choose to. They can share calendars with other people and easily and temporarily overlay them to make it easier to find times for meetings or events.
- Integrated Collaboration Features -- people can share and collaborate on documents, spreadsheets and presentations at the same time, whether working together in a physical meeting or participating remotely over the Internet. These documents are accessible from the same website as integrated email, calendaring, websites and many other applications.

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- Continuous Stream of Innovation -- modern vendors like Google are delivering a constant flow of new, innovative features, meaning people don't have to wait for future releases to gain access to desirable capabilities. This helps keep employees at the forefront of the technology wave, and support personnel do not need to perform extensive upgrade testing and implementation procedures every year.
 - Anytime, Anywhere Access to Services -- any mobile devices, including smartphones, iPads, laptops or netbooks can easily access these new GoogleApps services from anywhere with Internet access.

Hard Dollar Benefits

As compelling and desirable as the soft factors are, a migration consumes resources and must make financial sense. For a school district, this case is made easier because the main applications are free for all employees and students. Even the Microsoft product that competes with GoogleApps is free. But beware, even if this "lunch" is free, some of the "dessert" goodies, such as archiving services, are not free.

By migrating to GoogleApps in the cloud, a company will no longer need to pay for in-house mail servers and storage (e.g., for MS Exchange), or the staff to manage and maintain them. In addition, the license fees will be lower than was the case before with MS Exchange/Outlook. Staff and other resource costs of performing periodic upgrades will also be saved. Since there is so much good, free, online training available from the vendors and others on the Internet, there can also be a savings in the staff development and training area. If the organization runs the initial project costs and ongoing savings through a traditional Net Present Value computational spreadsheet over five years, the business case should be significantly positive. For example, in the case of the School District, our business case showed a net savings of over \$80,000 for server reduction, \$86,000 for storage reduction, and \$187,000 for Administrator costs, all over 5 years. These savings, combined with certain other smaller reductions added up to a net savings of \$330,000 over 5 years.

Even if the rate of return does not clear the organization's standard hurdle rate for prioritizing projects, an organization may need to perform the project anyway before the viral use of these tools gets out of control. In the school district, for example, out of over 80 schools, at least 23 separate (uncontrolled) school level domains cropped up before we could roll out the new tools under a central domain. This meant for these sites we had no central control over identity management, archiving and discovery (in the event of legal issues), and undesirable activities such as cyber bullying.

Consequently, we performed the employee migration to the central domain as fast as we could, and planned to eliminate all the local domains as soon as students were also migrated, thereby putting all tool use under central management.

Critical Success Factors and Lessons Learned

Based on past experience implementing a new Student Information System in the highly collaborative culture of the school district, we knew two categories of factors would be critical to the success of the migration: People Change Management Factors, and Technical Migration Factors.

Teachers, like many employees in other industries, are exceedingly busy people, and it can be understandably hard to get them to spend time on training or other activities requiring even more hours outside the classroom, especially if they perceive those activities as “added administrative burden” or “just another new program”. Consequently, it is crucial to over-communicate to employees to alleviate their concerns, explain what’s in it for them, and provide multiple training options.

People Change Management Considerations

Some considerations to mitigate potential people issues include:

- Develop and execute a formal Communications Plan. Work with Communications Department to create a plan for constant communications to all stakeholders throughout the project. Obtain buy-in from management, unions, and other key stakeholders.
- Conduct a formal Project Kickoff event. Invite management, trainers, and other team members to demonstrate management commitment, explain the project, and generate energy and excitement. Conduct a video conference to communicate the project kickoff to remote stakeholders.
- Keep people’s same email addresses. Even though the email address may in fact change to a gmail or other extension, this can be easily translated behind the scenes to allow keeping the original name and company domain name.
- Create a project resources web site using the cloud-based GoogleSites tool. Put all project plans, communications, documentation, online training, articles, FAQ’s, and other resources on the site.

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- Answer all known concerns on the website, in communications, and during training. For example, some people are concerned about security and privacy of information in the Google Cloud. We researched this and found white papers addressing the risks in detail. We concluded that the risk of our Google EMail and Documents getting hacked and exposing critical information about employees or students was low, especially since much of our information is publicly discoverable anyway. Each organization must assess its own risks and internal information security compared to Google's security.
 - Develop and execute a formal Training Plan. Ask for volunteers in every part of the organization to become local trainers (we called these people Google Ninjas, which generated a lot of fun and excitement). Train those trainers in person and online. Ask them to create a local training plan for the people in their area.
 - Ask for volunteers to receive GoogleApps early and test the functionality and data migration processes.
 - Provide both in-person and online user training for email, calendar, and groups.
 - A formal Support Plan must be developed before go-live. Initial support questions to the Level 1 service desk will be simpler, related to login id's and passwords, but will then become more complex, related to issues with functionality and features. These will need to be escalated to one or more strong Level 2 or 3 support personnel, who must be assigned and trained in advance to handle the more difficult questions.

Technical Considerations

From a technical standpoint, several critical factors must be addressed to ensure success and mitigate risks:

- Research the Source EMail system's technical architecture, record layouts and delimiters, and whether anyone has successfully migrated this data electronically before. If this information is not available from the vendor or others, the risks are dramatically higher. In the case of the school district, the source system was an older, relatively unheard of system which had never been migrated electronically by anyone before. The vendor would not share record layouts or any other technical design details. After our experienced contractor spent inordinate numbers of days attempting to convert emails, attachments and folders, we had to stop the effort and continue migrations by more "manual" export/import and forwarding methods.

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- Start Identity Management connector design and development early. Federated identity management may not be something your IT staff has experience with in the early stages of migrating to cloud-based applications. At the school district we used Oracle Identity Management and were fortunate to have strong in-house IDM-skilled people supported by an external contractor when necessary.
 - Plan and implement WAN, LAN, Internet and wireless network bandwidth upgrades early in anticipation of greater use of Internet based applications using wireless connections in conference rooms, training rooms, classrooms, etc. In the case of the school district, the initial bandwidth increase hovered around 100Mb/sec in usage of the pipe to/from the Internet. However, after people got used to the new system, and after some of the manual data conversion activities subsided, the ongoing increase has been about 50Mb/sec by the 6,500 employees. However, most teachers are not heavy users of email or calendaring, especially during the school day. When the 61,000 students across all grades are added soon, the impact will be higher, but not proportionally, partly because students tend to use texting or other communications means rather than email or calendaring. Even homework assignments are not generally submitted via email, rather they are dropped on the teacher's website or Learning Management System (e.g., Blackboard, eCollege, Moodle).

Conclusion

IT application development and support and technical infrastructure teams will learn a lot about how to implement cloud-based applications by "cutting their teeth" on early implementation of an integrated collaboration and communications system such as GoogleApps. Since others have gone down this path before, an IT organization can learn from positive and negative lessons learned, and avoid some of the pitfalls they might otherwise encounter. In summary, while the technology side of the project is critical, it can be the relatively easier part of the initiative. The harder and higher impact side is the people part of the project. Properly planned and executed people change management tasks will pay large dividends in the acceptance and perceived success of the migration project. So, to paraphrase the Nike slogan, "just do it", and get started on the path to the cloud.